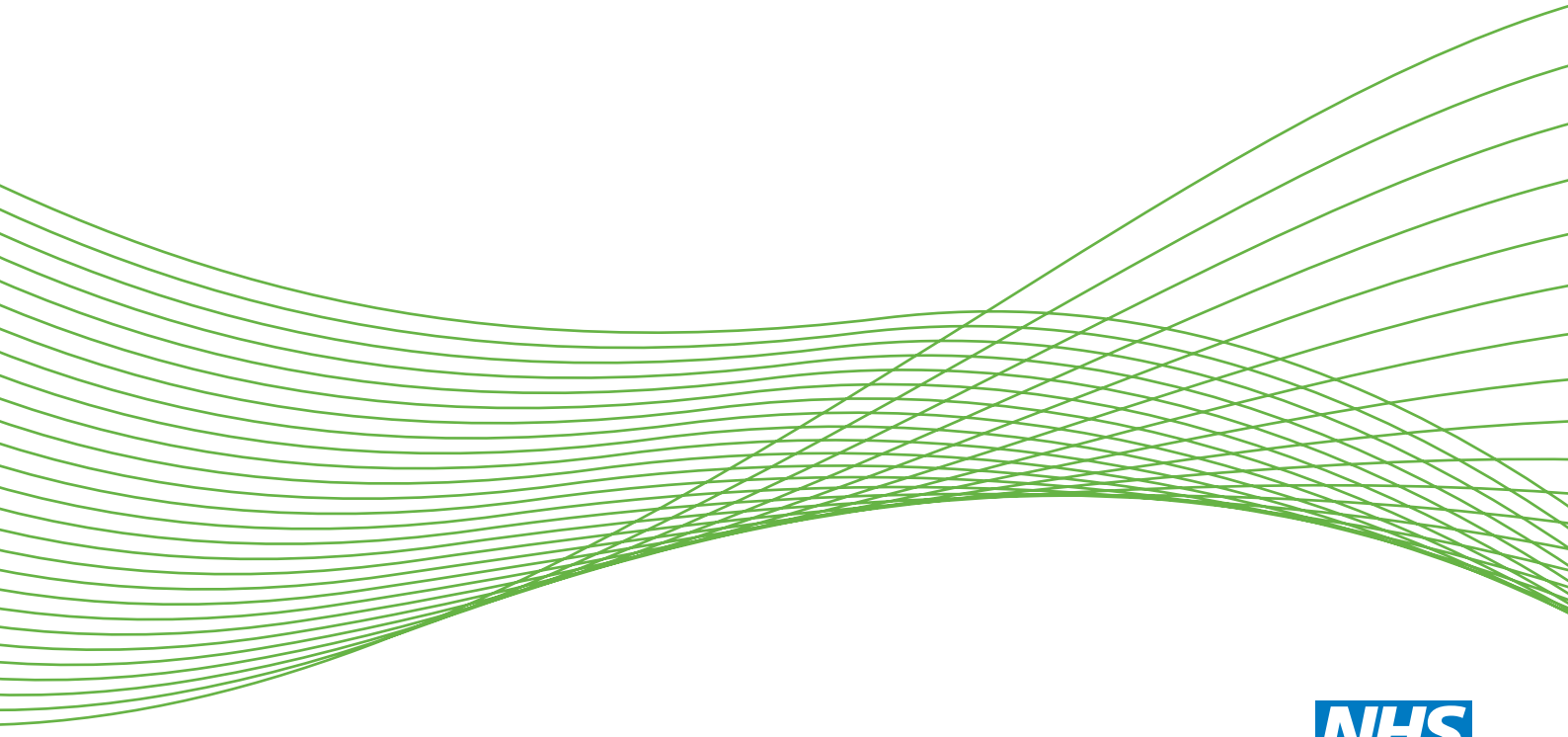
HEALTH SERVICES AND DELIVERY RESEARCH

VOLUME 6 ISSUE 3 JANUARY 2018
ISSN 2050-4349

Self-care support for children and adolescents with long-term conditions: the REfOCUS evidence synthesis

Penny Bee, Rebecca Pedley, Amber Rithalia, Gerry Richardson, Steven Pryjmachuk, Susan Kirk and Peter Bower



NHS
National Institute for Health Research

DOI 10.3310/hsdr06030

Self-care support for children and adolescents with long-term conditions: the REfOCUS evidence synthesis

Penny Bee,[1]* Rebecca Pedley,[1] Amber Rithalia,[1] Gerry Richardson,[2] Steven Pryjmachuk,[1] Susan Kirk[1] and Peter Bower[3]

[1]Division of Nursing, Midwifery and Social Work, University of Manchester, Manchester Academic Health Science Centre, Manchester, UK
[2]Centre for Health Economics, University of York, York, UK
[3]National Institute for Health Research School for Primary Care Research, University of Manchester, Manchester Academic Health Science Centre, Manchester, UK

*Corresponding author

Declared competing interests of authors: none

Published January 2018
DOI: 10.3310/hsdr06030

This report should be referenced as follows:

Bee P, Pedley R, Rithalia A, Richardson G, Pryjmachuk S, Kirk S, *et al*. Self-care support for children and adolescents with long-term conditions: the REfOCUS evidence synthesis. *Health Serv Deliv Res* 2018;**6**(3).

Health Services and Delivery Research

ISSN 2050-4349 (Print)

ISSN 2050-4357 (Online)

This journal is a member of and subscribes to the principles of the Committee on Publication Ethics (COPE) (www.publicationethics.org/).

Editorial contact: journals.library@nihr.ac.uk

The full HS&DR archive is freely available to view online at www.journalslibrary.nihr.ac.uk/hsdr. Print-on-demand copies can be purchased from the report pages of the NIHR Journals Library website: www.journalslibrary.nihr.ac.uk

Criteria for inclusion in the *Health Services and Delivery Research* journal

Reports are published in *Health Services and Delivery Research* (HS&DR) if (1) they have resulted from work for the HS&DR programme or programmes which preceded the HS&DR programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

HS&DR programme

The Health Services and Delivery Research (HS&DR) programme, part of the National Institute for Health Research (NIHR), was established to fund a broad range of research. It combines the strengths and contributions of two previous NIHR research programmes: the Health Services Research (HSR) programme and the Service Delivery and Organisation (SDO) programme, which were merged in January 2012.

The HS&DR programme aims to produce rigorous and relevant evidence on the quality, access and organisation of health services including costs and outcomes, as well as research on implementation. The programme will enhance the strategic focus on research that matters to the NHS and is keen to support ambitious evaluative research to improve health services.

For more information about the HS&DR programme please visit the website: http://www.nets.nihr.ac.uk/programmes/hsdr

This report

The research reported in this issue of the journal was funded by the HS&DR programme or one of its preceding programmes as project number 14/19/51. The contractual start date was in March 2015. The final report began editorial review in October 2016 and was accepted for publication in May 2017. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HS&DR editors and production house have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the final report document. However, they do not accept liability for damages or losses arising from material published in this report.

This report presents independent research funded by the National Institute for Health Research (NIHR). The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, NETSCC, the HS&DR programme or the Department of Health. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, NETSCC, the HS&DR programme or the Department of Health.

Published by the NIHR Journals Library (www.journalslibrary.nihr.ac.uk), produced by Prepress Projects Ltd, Perth, Scotland (www.prepress-projects.co.uk).

Abstract

Self-care support for children and adolescents with long-term conditions: the REfOCUS evidence synthesis

Penny Bee,[1]* Rebecca Pedley,[1] Amber Rithalia,[1] Gerry Richardson,[2] Steven Pryjmachuk,[1] Susan Kirk[1] and Peter Bower[3]

[1]Division of Nursing, Midwifery and Social Work, University of Manchester, Manchester Academic Health Science Centre, Manchester, UK
[2]Centre for Health Economics, University of York, York, UK
[3]National Institute for Health Research School for Primary Care Research, University of Manchester, Manchester Academic Health Science Centre, Manchester, UK

*Corresponding author Penny.E.Bee@manchester.ac.uk

Background: Self-care support (e.g. education, training, peer/professional support) is intended to enhance the self-care capacities of children and young people, while simultaneously reducing the financial burden facing health-care systems.

Objectives: To determine which models of self-care support for long-term conditions (LTCs) are associated with significant reductions in health utilisation and costs without compromising outcomes for children and young people.

Design: Systematic review with meta-analysis.

Population: Children and young people aged 0–18 years with a long-term physical or mental health condition (e.g. asthma, depression).

Intervention: Self-care support in health, social care, educational or community settings.

Comparator: Usual care.

Outcomes: Generic/health-related quality of life (QoL)/subjective health symptoms and health service utilisation/costs.

Design: Randomised/non-randomised trials, controlled before-and-after studies, and interrupted time series designs.

Data sources: MEDLINE, EMBASE, PsycINFO, Cumulative Index to Nursing and Allied Health Literature, ISI Web of Science, NHS Economic Evaluation Database, The Cochrane Library, Health Technology Assessment database, Paediatric Economic Database Evaluation, IDEAS, reference scanning, targeted author searches and forward citation searching. All databases were searched from inception to March 2015.

Methods: We conducted meta-analyses, simultaneously plotting QoL and health utilisation effects. We conducted subgroup analyses for evidence quality, age, LTC and intervention (setting, target, delivery format, intensity).

Results: Ninety-seven studies reporting 114 interventions were included. Thirty-seven studies reported adequate allocation concealment. Fourteen were UK studies. The vast majority of included studies recruited children and young people with asthma ($n = 66$, 68%). Four per cent of studies evaluated 'pure' self-care support (delivered through health technology without additional contact), 23% evaluated

facilitated self-care support (≤ 2 hours'/four sessions' contact), 65% were intensively facilitated (≥ 2 hours'/four sessions' contact) and 8% were case management (≥ 2 hours' support with multidisciplinary input). Self-care support was associated with statistically significant, minimal benefits for QoL [effect size (ES) –0.17, 95% confidence interval (CI) –0.23 to –0.11], but lacked clear benefit for hospital admissions (ES –0.05, 95% CI –0.12 to 0.03). This finding endured across intervention intensities and LTCs. Statistically significant, minimal reductions in emergency use were observed (ES –0.11, 95% CI –0.17 to –0.04). The total cost analysis was limited by the small number of data. Subgroup analyses revealed statistically significant, minimal reductions in emergency use for children aged ≤ 13 years (ES –0.10, 95% CI –0.17 to –0.04), children and young people with asthma (ES –0.12, 95% CI –0.18 to –0.06) and children and young people receiving ≥ 2 hours per four sessions of support (ES –0.10, 95% CI –0.17 to –0.03). Preliminary evidence suggested that interventions that include the child or young person, and deliver some content individually, may optimise QoL effects. Face-to-face delivery may help to maximise emergency department effects. Caution is required in interpreting these findings.

Limitations: Identification of optimal models of self-care support is challenged by the size and nature of evidence available. The emphasis on meta-analysis meant that a minority of studies with incomplete but potentially relevant data were excluded.

Conclusions: Self-care support is associated with positive but minimal effects on children and young people's QoL, and minimal, but potentially important, reductions in emergency use. On current evidence, we cannot reliably conclude that self-care support significantly reduces health-care costs.

Future work: Research is needed to explore the short- and longer-term effects of self-care support across a wider range of LTCs.

Study registration: This study is registered as PROSPERO CRD42014015452.

Funding: The National Institute for Health Research Health Services and Delivery Research programme.

Contents

List of tables

List of figures

List of boxes

List of abbreviations

CBA	controlled before-and-after study
CDSR	Cochrane Database of Systematic Reviews
CENTRAL	Cochrane Central Register of Controlled Trials
CI	confidence interval
DARE	Database of Abstracts of Reviews of Effects
ED	emergency department
EPOC	Effective Practice and Organisation of Care
ES	effect size
HbA_{1c}	glycated haemoglobin
HCP	health-care professional
HEED	Health Economic Evaluations Database
HRQoL	health-related quality of life
ICER	incremental cost-effectiveness ratio
LTC	long-term condition
NHS EED	NHS Economic Evaluation Database
nRCT	non-randomised controlled trial
PEDE	Paediatric Economic Database Evaluation
PPI	patient and public involvement
QoL	quality of life
RCT	randomised controlled trial
RE-AIM	Reach, Effectiveness, Adoption, Implementation, Maintenance
RECURSIVE	REducing Care Utilisation thRough Self-management InterVEntions
SD	standard deviation
SSCI	Social Sciences Citation Index

Plain English summary

Long-term conditions (LTCs) are physical or mental health conditions that cannot be cured, that have an impact on a person's life and that require ongoing care and support. Large numbers of children and young people live with LTCs and the NHS is under pressure to find more efficient ways of caring for them. It is crucial that any changes to services do not risk children and young people's quality of life (QoL).

Self-care support describes techniques that help young people and their families gain the confidence, skills and knowledge they need to manage their condition and get the most out of health services. Self-care support is often provided by a health professional, but could also be given by another person who is able to help (e.g. teacher, parent or peer).

NHS policy-makers would like to know which types of self-care support are most likely to reduce costly health services without risking children and young people's QoL. To answer this question, we identified all studies that reported the effects of self-care support for children and young people (aged < 18 years) with long-term physical or mental health conditions. We included studies that reported effects on QoL or health symptoms and service use.

Ninety-seven studies were included, evaluating 114 interventions. Most interventions were for children and young people with asthma and provided over 2 hours per four sessions of self-care support.

Self-care support led to small improvements in children and young people's QoL. It did not reduce children and young people's hospital admissions but did lead to small reductions in children's emergency service use. Interventions that reduced service use did not automatically reduce children and young people's QoL, but study results varied. Future studies should test different types of self-care support over a wider range of conditions.

Scientific summary

Background

Commensurate with trends in the adult population, long-term conditions (LTCs) in children and young people are increasing and there is growing international emphasis on developing effective, efficient and person-centred models of service delivery to meet the needs of this patient group. Health-care providers are faced with the growing need to deliver high-quality services in a way that maximises available financial resources without compromising care quality or health outcomes for children and young people. Self-care support interventions offer a potential solution to this problem and are intended to enhance the self-care capacities of children, young people and their families, while simultaneously reducing the fiscal burden facing contemporary health-care systems.

Self-care can be defined as the actions that people take to maintain their physical and mental health; meet social and psychological needs; prevent illness or accidents; and maintain their health and well-being. Self-care support refers to the role played by health-care professionals (or other self-care support agents, such as teachers or peers), in supporting the individual and/or their families to take control of a health condition through developing their confidence, knowledge and skills, and their psychological and social resources.

An implicit assumption underlying self-care support is that it can help people to avoid unnecessary crises and prevent more extensive health services utilisation by managing patients' problems more effectively. Children diagnosed with LTCs face a lifetime of symptom management, and the extent to which they and their families negotiate this in childhood is likely to influence their longer-term health outcomes, life chances and subsequent patterns of health service utilisation. Providing optimal, evidence-based support for self-care thus has the potential to make significant and sustained contributions to NHS efficiency, as well as improving quality of care and health outcomes.

Objectives

To determine which models of self-care support for LTC management are associated with significant reductions in health services utilisation and cost, without compromising quality of life (QoL) or health status outcomes for children and young people.

Methods

We conducted a systematic review with meta-analysis. We defined self-care support as 'any intervention primarily designed to develop the abilities of children and young people (and/or their adult carers) to undertake management of their long-term health condition through education, training and support to develop their knowledge, skills or psychological and social resources'. Our review inclusion criteria were as follows:

- population – children and young people aged 0–18 years with a long-term physical or mental health condition
- intervention – self-care support delivered in a health, social care, educational or community setting
- comparator – usual care, including more intensive usual care (e.g. clinic or inpatient management)
- outcomes – quantitative measures of generic, health-related QoL or disease-specific symptom measures or events and health service utilisation or costs
- design – randomised trials, non-randomised trials, controlled before-and-after studies, interrupted time series designs.

To identify relevant literature, we searched multiple electronic databases: MEDLINE, EMBASE, PsycINFO, Cumulative Index to Nursing and Allied Health Literature, ISI Web of Science (including Social Sciences Citation Index and Science Citation Index Expanded), NHS Economic Evaluation Database, The Cochrane Library (including Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects and Cochrane Central Register of Controlled Trials), Health Technology Assessment database, Paediatric Economic Database Evaluation and IDEAS. All databases were searched from inception to March 2015. No language restrictions were applied. Additional search strategies included scanning the bibliographies of all relevant retrieved articles, targeted author searches and forward citation searching.

Data were extracted on populations, interventions, study quality and outcomes. We extracted data that allowed us to report a measure of the magnitude of effects [a standardised 'effect size' (ES)] for both health outcomes and costs. We conducted meta-analyses and presented the results of the included studies according to a permutation plot, simultaneously plotting the effect of interventions on service utilisation and health. Each plot gives a visual impression of the distribution of studies across the cost-effectiveness plane, distinguishing between studies that reduce costs without compromising outcomes and those that reduce costs but also compromise outcomes, or those that compromise both outcomes and costs.

We analysed data for included studies as a whole and then conducted meaningful subgroup analyses for level of evidence quality (defined as the adequacy of allocation concealment), age of the children and young people, type of LTC and the setting and type of self-care support intervention that was evaluated (i.e. intervention target, format, delivery method and intensity).

Results

We screened 36,493 unique records for eligibility; 97 studies reporting on 114 interventions were included in our review. Thirty-seven trials (38% of all included studies) were rated as being of high quality (i.e. at a low risk of bias) on the basis of adequate randomisation and allocation concealment. Fourteen studies (14%) were conducted in the UK.

The vast majority of included studies recruited children and young people with asthma ($n = 66$, 68%) or long-term mental health conditions ($n = 18$, 19%). Fewer studies included children with diabetes ($n = 6$), other physical health conditions ($n = 2$) and behavioural difficulties ($n = 5$). The mean age of the children and young people participating in the primary studies was 10.12 years (standard deviation 3.9 years). Of the interventions, 4% were categorised as pure self-care (i.e. delivered through a health technology without any additional support), 23% as facilitated self-care (< 2 hours'/four sessions' support), 65% as intensively facilitated self-care (> 2 hours'/four sessions' support) and 8% as 'case management' (> 2 hours' support including input from a multidisciplinary team).

The majority of self-care support interventions targeted adult caregivers, either together or in parallel with children and young people. These interventions were most typically delivered face to face to individuals, or individual families, in either an outpatient setting or a patient's home.

A moderately sized evidence base enabled meaningful assessments of the effect of self-care support interventions on children and young people's health and QoL (77 comparisons), hospital admissions (65 comparisons) and emergency department (ED) visits (57 comparisons). Other forms of health service use (e.g. primary care visits) were inconsistently reported and were not amenable to meta-analysis. There was a comparative lack of data demonstrating the effects of self-care support on total health service costs (10 comparisons) and variability across studies reporting total cost outcomes was high.

Self-care support interventions have significant but minimal benefits for children and young people's QoL [ES –0.17, 95% confidence interval (CI) –0.23 to –0.11], but lack clear benefits for hospital admissions (ES –0.05, 95% CI –0.12 to 0.03) and total health-care costs (ES –0.11, 95% CI –0.47 to 0.25). Minimal

reductions in ED use were observed (ES –0.11, 95% CI –0.17 to –0.04). Data on QoL outcomes suggest the possibility of small study bias. Sensitivity analyses that restricted evidence to high-quality trials confirmed that the findings were robust.

Subgroup analyses revealed statistically significant, minimal reductions in emergency use for children aged ≤ 13 years (ES –0.10, 95% CI –0.17 to –0.04), children and young people with asthma (ES –0.12, 95% CI –0.18 to –0.06) and children and young people receiving ≥ 2 hours per four sessions of support (ES –0.10, 95% CI –0.17 to –0.03). The different ESs observed in these subgroup analyses will, in part, reflect differences in the number of studies available and the precision of pooled effects; additional evidence is required to confirm or reject these hypotheses.

Preliminary analyses suggest that the effects of self-care support on children and young people's QoL and ED visits may be optimised by interventions that include the child or young person and deliver at least some of their content to an individual or individual family. Group-based delivery may be more advantageous in reducing hospital admissions, although effects are likely to remain small.

Self-care support interventions for children and young people can vary considerably in the extent to which they target different service utilisation behaviours and it is possible that this influence is meaningful. It is plausible, for instance, that although written action plans to control asthma exacerbations may play a direct role in reducing ED visits, self-care support for mental health may be focused on longer-term recovery and service user empowerment.

Preliminary data in our permutation plots suggest that self-care support for asthma is capable of reducing some aspects of health utilisation for children and young people, but high variability in patient outcomes means that compromises in health status cannot definitively be ruled out. Self-care support interventions that reduce health utilisation for children and young people with mental health conditions may be less likely to compromise patient outcomes, but limited data, and pooling across different conditions, mean that these results must be treated with caution. Lack of data prevented permutation plots being generated for other LTCs.

Conclusions

Self-care support for children and young people is advocated as a key method of increasing service efficiency, but there remains some uncertainty regarding the scale of the contribution that can be made. Current evidence suggests that self-care support interventions will have positive but minimal effects on children and young people's QoL, but may have a limited impact on health utilisation and costs. Self-care support for children and young people is associated with significant but small reductions in ED use, particularly in relation to asthma. Models of self-care support that reduce utilisation do not routinely compromise patient outcomes. However, the effects are highly variable and compromises in children and young people's QoL cannot be definitively ruled out.

New primary research is urgently needed to ascertain the effects of self-care support across a wider range of LTCs and to explore if, and which, models of self-care support can achieve more powerful, consistent effects on health service utilisation.

Future studies should adopt clear and consistent standards of data reporting, including comprehensive reporting of patient outcomes, utilisation and costs. New research should adopt innovative methods of patient recruitment to maximise intervention reach and consider the feasibility of longer-term follow-up to explore potential differences in the shorter- and longer-term effects of self-care support for children and young people.

Study registration

This study is registered as PROSPERO CRD42014015452.

Funding

Funding for this study was provided by the Health Services and Delivery Research programme of the National Institute for Health Research.

Foreword

It's simple, being the parent of a child with a long-term condition is tough. You watch your child struggle. You have very little to offer. It is their burden, and as a parent, you want to carry it. Doctors tell us what to do and what should happen. But it doesn't really work that way. Families manage in unique ways. Sometimes, self-care is our only way to take control. We care for our kids, we look things up, we try alternative solutions and we do our best. Often, it's not enough, and that can leave us frustrated. We are the ones awake at night, holding our children's hands, giving them medication and contemplating their futures. Parents of children with long-term conditions want everything for their children. On good days, we are rational, we appreciate everything we are offered and we understand the limitations of a burdened health service. We understand our own role and we embrace our situation. During the tough times, we just want to carry the burden and we don't know how. We know that 'throwing money' at the problem won't solve it, but we are tired and sad, and we expect more. Using self-care support to reduce unnecessary health service use is important. Finding out which types of self-care support can reduce service use without compromising our own children's health is crucial.

Parent member, REfOCUS advisory panel

Terminology

Throughout this report, we use the term 'parent'. This term is intended to cover a breadth of roles and has been chosen in preference to alternative and lengthier terms such as 'parent/guardian' or 'adult caregiver'. We acknowledge that not all adults who are parenting children are biological parents.

Chapter 1 Background

Context

The global burden of disease is shifting to long-term conditions (LTCs)[1] and there is increasing international emphasis on developing effective, efficient and person-centred models of service delivery to meet the needs of this client group.[2–4] Self-care support interventions constitute a central aspect of this agenda[5–12] and are intended to empower individuals and enhance their self-care capacities and capabilities, while simultaneously reducing the fiscal burden on health-care systems.[13,14]

The Department of Health defines a LTC as one 'that cannot be cured but can be managed through medication and/or therapy'.[11] Underpinning the policy emphasis on self-care support for LTCs are a number of philosophical and patient-centred drivers. The shift in illness patterns from acute conditions to LTCs has coincided with a change in philosophy from 'cure' to 'care'. Growing dissatisfaction with impersonal services, greater desire for personal control in health interactions and enhanced awareness of the potential impact of lifestyle on longevity and well-being have all complemented the drive to optimise health outcomes, without exacerbating rising health-care costs.[8,15] The English strategy for the NHS, the *Five Year Forward View*,[3] emphasises the importance of health promotion, ill-health prevention and early intervention for sustainable health-care services, and mandates new models of care, including self-care, to facilitate efficiency savings alongside improved patient outcomes.

A global economic crisis means that substantial effort continues to be invested in improving the efficiency of health-care systems. Yet, despite self-care being advocated as a key way in which to increase efficiency, there remains uncertainty regarding the scale of the contribution that can be made.[16,17] Evidence for the success of self-care support has predominantly focused on individually centred outcomes of behavioural change and, until recently, ambiguity has surrounded the impact of these models on health service utilisation and costs. Initial reports of the effects of self-care support on health-care utilisation have not been consistently replicated across studies[17–23] and the focus of interventions on enhancing intermediate outcomes such as self-efficacy has generated debate regarding the relevance of existing evidence to service commissioners.[24,25]

A previous National Institute for Health Research-funded systematic review, REducing Care Utilisation thRough Self-management InterVEntions (RECURSIVE),[26] successfully responded to this challenge by attempting to determine which models of self-care support were associated with significant reductions in health service utilisation without compromising the health outcomes of adults with LTCs. This review concluded that self-care support in adults is associated with small but significant improvements in quality of life (QoL) and, importantly, that only a minority of self-care support studies report reductions in health-care utilisation in conjunction with reductions in health status. However, patterns of health- and social-care utilisation in children and young people may be qualitatively and quantitatively very different from adults, and potential differences in the factors and systems influencing engagement in self-care support across the lifespan[27–30] make it difficult to extrapolate these findings to younger populations. This review applies the approach employed by RECURSIVE[26] to this different population. It builds on two previous National Institute for Health Research-funded reviews[31,32] that investigated the effectiveness and acceptability of self-care support interventions for children and young people with long-term physical and mental health conditions, both updating and integrating them into a single data set.

Self-care and self-care support

There is some conceptual blurring in the literature, with 'self-care' and 'self-management' often being used interchangeably in physical health, and terms such as 'self-help' and 'recovery-centred care' being preferred in mental health.[31–34] Resilience is often associated with self-care and is seen as a means of strengthening an individual's capacity to self-care or as a buffer to the stresses associated with LTCs.[35] For the most part, however, self-care is regarded as the overarching term, with the alternative terms reflecting different variants of self-care or its influencing factors (*Figure 1*). A commonly accepted definition of self-care[8] is:

> *The actions people take for themselves . . . to stay fit and maintain good physical and mental health; meet social and psychological needs; prevent illness or accidents; care for minor ailments and long-term conditions; and maintain health and wellbeing after an acute illness or discharge from hospital.*
>
> *Department of Health.[8] © Crown copyright 2005. Contains public sector information licensed under the Open Government Licence v1.0*

Whatever the terminology that is used, self-care ultimately refers to an approach in which control (and responsibility) shifts from the health-care professional (HCP) to the individual (or to the individual and their families/carers in the case of children and young people). This shift in control has implications for HCPs in that, within a philosophy of self-care, professionals work with patients, services users and their families as partners.[13]

Partnership working introduces the notion of support for self-care (or self-care support). Support for self-care refers to HCPs (or other self-care support 'agents', such as a teachers or peers), supporting the individual and/or their families to take control of their health condition through developing their confidence, knowledge and skills.[8,36,37] This may occur via a variety of methods and techniques (e.g. information provision, psychoeducation and skills training) delivered in a variety of formats (e.g. online, face to face or by telephone) to individuals or groups.[8,32,33]

In this study we have chosen to use the term self-care support rather than self-management support because this broader term incorporates self-management, self-help, recovery and resilience support. Furthermore, the term self-care support is more appropriate in describing the interventions examined.

Self-care support in children and young people

'Whole-systems' guidance advocates modernisation of the health-care system to improve the quality and efficiency of the services that children, young people and their families receive.[38] International childhood mortality data, combined with evidence of substantial variation in LTC management in this younger population, attest to how much additional effort is still required to achieve this goal. Compared with other nations, evidence points to a disproportionate number of UK children dying from non-communicable

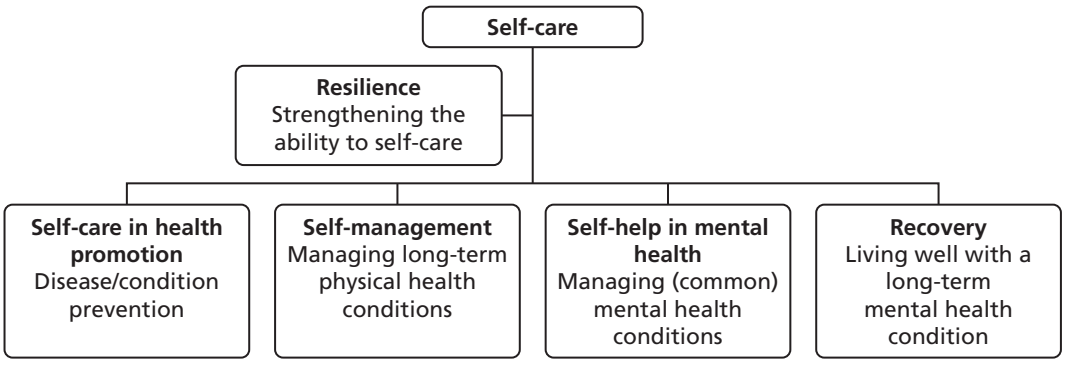


FIGURE 1 Relationship of self-care concepts.

diseases and a rapid increase in the number of children and young people living with LTCs.[38,39] Fifteen per cent of children aged between 11 and 15 years experience long-term illness or disability and 10% have a mental health problem.[40–42] Over the last decade, child health policy has highlighted the vulnerability of these children and emphasised the need for health services to engage with them and support them effectively in self-care behaviours.[38,39,43–45]

The case for early intervention in LTCs is compelling. Children diagnosed with LTCs face a lifetime of symptom management, and the extent to which they and their families negotiate this in childhood is likely to influence their longer-term health outcomes, life chances and subsequent patterns of health service utilisation.[31,39] Providing optimal, evidence-based support for self-care thus has the potential to make a significant and sustained contribution to NHS efficiency, as well as improving care quality and delivering direct benefits to patient health.

The role and effectiveness of different forms of self-care support in adults has been explored. An already extensive evidence base includes rigorous evaluations of the Expert Patients Programme and assistive technologies through the Whole System Demonstrator programme. To date, however, wholesale transfer of adult models to children and young people's services has failed.[46,47] Comprehensive models of self-care[48,49] argue that self-care cannot be divorced from the broader context in which it occurs. In children and young people, self-care knowledge, attitude and behaviour change[50] are open to influence from health services, parents and peers.[51–53] Adolescence, in particular, is often characterised by increased risk-taking, lack of adherence to treatment regimens and a greater than normal deterioration in health status.[27,29,54–56] The importance of developing child- and young person-centred models that are developmentally appropriate and reflect the roles of parents and peers is increasingly being recognised.[31]

Studies investigating the effectiveness of self-care support interventions designed for children and young people suggest positive effects on health status, QoL, self-efficacy, condition-related knowledge and coping.[31,32,57,58] For some interventions, acceptability has also been demonstrated. Qualitative studies reveal that children, young people and parents all value the opportunities that group-based self-care support provide to interact with others in similar situations to themselves. Interventions that use e-health methods to deliver self-care support have been judged to be feasible and applicable.[31,32]

Yet, despite a developing body of evidence on the clinical effectiveness of self-care support interventions for children and young people, key knowledge gaps remain. There has been insufficient synthesis of quantitative data on health-care utilisation and the comparative effectiveness of different self-care support strategies. Previous reviews and meta-analyses have focused almost exclusively on intermediate or clinical outcomes, and rigorous evaluations of the cost-effectiveness of self-care interventions and their impact on health-care utilisation are lacking. Moreover, existing reviews do not explore associations between content and outcomes; they typically treat outcomes and costs as separate concepts and rarely have an explicit focus on the joint effects of outcomes and costs. This makes it difficult to identify technically efficient interventions capable of reducing unnecessary health-care use [such as avoidable emergency department (ED) visits and hospital admissions] without potentially compromising children and young people's health.

Assessing the efficiency of self-care support

Commensurate with trends in the adult population, long-term physical and mental health conditions in children and young people are increasing.[59–61] Self-care support offers these young people and their families the opportunity to work collaboratively with professionals, actively participate in health-care decision-making and ensure that care is personalised to their needs. An implicit assumption underlying the use of self-care support is that it can successfully shift LTC management from health services to the patient, avoid unnecessary crises and prevent more extensive health services utilisation by managing patients' problems more effectively. This has the potential to improving patient outcomes while simultaneously reducing resource utilisation and costs.

In health care, resource utilisation typically refers to as the number and type of health-care resources or services that are used, for example health professionals' time, medicines, diagnostic tests/investigations and treatment appointments. Each aspect of resource utilisation incurs a cost. Rigorous and comprehensive evaluation of the effects of self-care support for children and young people thus demands concurrent evaluation of patient outcomes and health-care costs. As shown in *Figure 2*, plotting these effects against each other can identify models of self-care that are able to reduce costs without comprising outcomes for children and young people (quadrant A) and distinguish these from models that reduce both outcomes and costs (quadrant B), or improve outcomes at increased cost (quadrant C).

Systematic reviews and meta-analyses bear witness to the number of trials of self-care support for children and young people that have been conducted. Although not always designed to enable a full economic analysis, many present sufficient data to enable the intervention to be placed on the cost-effectiveness plane. Systematic synthesis of these data is required to inform evidence-based decision-making and the commissioning of high-quality, technically efficient services.

Review aim

The review reported here aimed to take account of health-care utilisation and costs in conjunction with health outcomes to provide evidence-based guidance on the provision of cost-effective self-care support for children and young people with long-term physical and mental health conditions.

Our objectives were to:

1. identify and integrate into one data set, eligible data from existing reviews on the clinical effectiveness and cost-effectiveness of self-care support interventions for children and young people with long-term physical and mental health conditions
2. update and expand existing search strategies to increase their sensitivity to a broader range of measures of health-care utilisation in children and young people
3. conduct a quantitative systematic review of the available evidence to identify those models of self-care support for children and young people that are associated with reductions in health services utilisation and cost, without compromising health outcomes
4. provide evidence-based recommendations for service commissioners regarding the optimal delivery models for self-care support interventions
5. provide key recommendations for research funding bodies on future research priorities.

Chapter 2 describes the review methods.

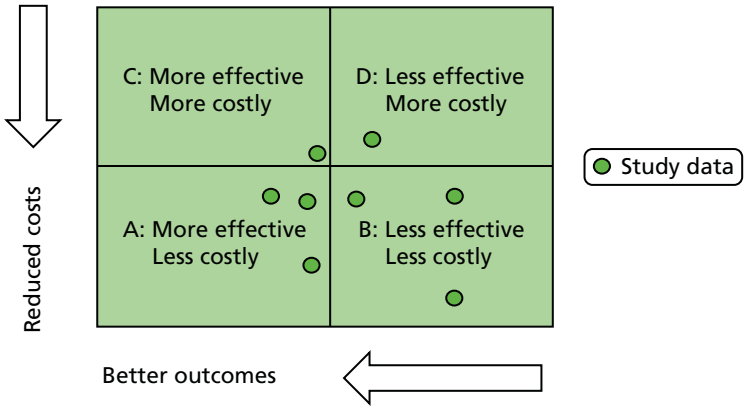


FIGURE 2 Example matrix showing effects on utilisation and outcomes. Adapted from Panagioti *et al.*[26] Contains information licensed under the Non-Commercial Government Licence v2.0.

Chapter 2 Review methods

The review reported here was a quantitative systematic review that sought to answer three key questions:

1. What models of self-care support are associated with significant reductions in health-care utilisation without compromising health outcomes for children and young people with LTCs?
2. What are the key recommendations for service commissioners regarding the delivery of self-care support for LTCs in children and young people?
3. What are the priorities for research funding bodies regarding self-care support in children and young people?

Our review was conducted in line with current systematic review guidance.[62,63]

Study eligibility criteria

Studies were assessed for inclusion in the review according to a standard set of eligibility criteria. These criteria are summarised in *Box 1* and described in full below.

Population

We defined children and young people as individuals aged < 18 years. Although the transition to adult services is not always immediate and key elements of development may continue beyond 18 years of age, this cut-off point aligned with our earlier reviews on the clinical effectiveness of self-care support interventions for children and young people. In accordance with the inclusion criteria of our previous reviews, we included studies with participants aged up to 25 years as long as the mean age of the sample, and/or the majority of participants, remained under the age of 18 years.

We restricted our review to LTCs. To be eligible for inclusion in the review, participants were required to have a diagnosis of a LTC, defined through clinical assessment, contact with health services or symptom scores above clinical cut-off points on validated screening instruments. We excluded preventative studies that looked at a population at 'high risk' of developing a LTC.

There is no definitive list of LTCs and hence we adopted the Department of Health's generic definition of a LTC as one 'that cannot be cured but can be managed through medication and/or therapy'.[11] We included studies recruiting patients with a mix of LTCs.

Both mental and physical health conditions were eligible for inclusion in the review. This included common conditions such as diabetes, asthma, coronary heart disease, depression, anxiety and psychosis. Comprehensive lists of eligible conditions are provided in *Box 2*. In line with the views of our patient and public involvement (PPI) advisory panel, we excluded autism spectrum disorder, intellectual disabilities, substance misuse (unless comorbid with another LTC) and cancer in long-term recovery or remission, as these conditions were deemed to fall outside our working definition of a long-term physical or mental health condition.

Interventions

Self-care can be defined in different ways according to who engages in the self-care behaviour (e.g. individual, family, community) and the intervention context (e.g. health promotion, illness prevention, illness impact limitation or restoration of health). To meet the definition of self-care support, an intervention needs to include an agent other than the self, typically a health professional, peer group, voluntary sector representative or information technology platform.

BOX 1 Summary of study eligibility criteria

Inclusion criteria

Population

Children and young people aged 0–18 years with a long-term physical health condition evidenced through clinical diagnosis, contact with health services or scores above clinical cut-off points on validated screening measures.

Intervention

Self-care support delivered in a health, social care or educational setting.

Comparator

Usual care, including more intensive usual care (e.g. clinic or inpatient management).

Outcomes

Generic, HRQoL, or disease-specific symptom measures or events and health service utilisation (i.e. hospital visits and admissions, additional service use and costs).

Design

Randomised trials, non-randomised trials, CBAs, ITS designs.

Exclusion criteria

At-risk populations or preventative interventions; self-care interventions lacking active support (e.g. pure self-care, passive instruction); intermediate health outcomes (e.g. self-efficacy, HbA_{1C} levels, FEV recordings) and health outcomes of adult caregivers.

CBA, controlled before-and-after study; FEV, forced expiratory volume; HbA_{1c}, glycated haemoglobin; HRQoL, health-related quality of life; ITS, interrupted time series.

The goal of self-care support has previously been defined as the enablement of patients to perform three discrete sets of tasks: medical management of their condition (e.g. taking medication); carrying out normal roles and activities; and managing the emotional impact of their condition.[64] For the purposes of our review, we defined a self-care support intervention as:

. . . any intervention primarily designed to develop the abilities of children and young people (and/or their adult carers) to undertake management of their long-term health condition through education, training and support to develop their knowledge, skills or psychological and social resources.

Example categories of self-care support of relevance to this review are outlined in *Box 3*. We included all formats and delivery methods for self-care support (e.g. group or individual, face to face or remote, professional or peer led). Interventions delivered in health, social care, educational or community settings were included. Interventions that targeted the child or young person, or their adult caregiver, were included.

BOX 2 Examples of LTCs in children and young people

Eligible for the review

Physical health

Asthma, diabetes, congenital heart disease, stroke, musculoskeletal disorders, epilepsy, chronic fatigue syndrome, sickle cell disease, cleft palate, cystic fibrosis, chronic skin conditions, inflammatory bowel disease, thalassaemia, HIV infection/AIDS.

Mental health

Conduct disorder, ADHD, anxiety (including panic), phobia, school refusal/phobia, depression, OCD, traumatic stress (PTSD), self-harm, psychosis including schizophrenia, eating disorders (including anorexia and bulimia).

Ineligible for the review

Autism spectrum disorder, intellectual disabilities, substance misuse, cancer in long-term recovery or remission, obesity.

ADHD, attention deficit hyperactivity disorder; AIDS, acquired immunodeficiency syndrome; HIV, human immunodeficiency virus; OCD, obsessive–compulsive disorder; PTSD, post-traumatic stress disorder.

BOX 3 Examples of self-care support for children and young people

Education or training, for example disease-specific education or behaviour change interventions for CYP and/or their adult caregivers. Education or training may be delivered online, paper based, face to face or through audio/visual technologies.

Decision support, for example support to help CYP and their families to make decisions about their treatment options.

Monitoring and feedback, for example real-time telephone or computer-based monitoring methods, with active monitoring from professionals, feedback response and potential access to a wider care team.

Environmental adaptations, for example supported living equipment or home modification.

Collaborative care planning, for example discussion and negotiation between professionals and CYP and/or their adult caregivers regarding illness and care management and goals.

Psychological support, for example face-to-face or online peer support, or formal counselling/therapy from a health professional.

CYP, children and young people.

Written action plans, developed in collaboration with children and young people or their families, were eligible for the review, but were excluded if there was no evidence of self-care discussion or negotiation. Self-care support, by definition, is designed to offer a more participatory approach to health care, with patients making a critical contribution to achieving health gain and making decisions to ensure that their care is personalised to their needs. We excluded all interventions where the target of the intervention was not actively engaged and/or remained a passive recipient of knowledge or instructions.

We excluded self-care undertaken without any input, guidance or facilitation by services. Although self-care can be, and often is, undertaken without service support, it is rarely the subject of intervention studies. We excluded studies where the effects of self-care support could not be distinguished from broader interventions for LTCs. We excluded studies evaluating service development or quality improvement initiatives in which self-care support was not the predominant component of the intervention.

Comparators

We included studies in which a self-care support intervention was additional to usual care and compared against usual care alone, or in which a self-care support intervention was compared against a more intensive usual care intervention (e.g. home- vs. clinic-based monitoring). We excluded studies in which two versions of self-care support were compared and the two interventions were of comparable intensity and content, because such comparisons did not allow for an assessment of the impact of self-care support per se.

Outcomes

To meet our research objectives, we required evidence of effectiveness of validated self-care support to reduce health-care utilisation without compromising children and young people's outcomes. We restricted our analysis to studies of self-care support that reported quantitative data on patient outcomes and health-care utilisation, as these were the only studies that could answer our brief.

Eligible patient outcomes included standardised measures of health-related or generic QoL or disease-specific symptom measures or events. We excluded intermediate outcomes and measures of psychological or clinical variables that did not provide an assessment of subjective health status or QoL [e.g. self-care behaviours, self-efficacy, glycated haemoglobin (HbA_{1C}) levels or forced expiratory volume recordings]. In adult populations, such variables are known to be unreliable indicators of health-related quality of life (HRQoL).[65] We extracted data on the health outcomes of the child/young person and excluded the health outcomes of adult caregivers.

Eligible outcomes for health-care utilisation comprised data on hospital visits and admissions, emergency care, primary care visits, other scheduled or unscheduled health-care use, patient costs and total costs. Our primary foci were comprehensive measures of health service costs (i.e. summed totals of multiple sources of cost) and/or major cost drivers (i.e. hospital admissions). Other, more minor, costs (such as medication use) were identified but not formally analysed. The rationale for this is discussed further in *Data preparation and analysis*.

Design

We included randomised controlled trials (RCTs), non-randomised controlled trials (nRCTs), controlled before-and-after studies (CBAs) and interrupted time series designs, as defined according to the Effective Practice and Organisation of Care (EPOC) criteria[63] (*Box 4*). UK and non-UK studies were included. Translation of non-English-language studies was undertaken.

Search methods

In accordance with the review protocol, our search strategies included electronic database searches, reference list searches, targeted author searches and forward citation searching.

Electronic databases

We began the process of identifying eligible studies by checking published reviews, including those previously undertaken by the research team.[26,31,32] We complemented our searches of existing reviews with a primary search of multiple electronic databases, conducted in March 2015.

We updated and expanded our existing search strategies to ensure that they were sensitive to a broad range of health-care utilisation beyond formal cost-effectiveness analyses. Search terms relating to the key

BOX 4 Eligible study designs defined according to the EPOC criteria

Randomised controlled trials

Investigators allocate participants to the different groups that are being compared using a method that is random. Randomisation ensures that participants in each comparison group should differ only in their exposure to the intervention. Randomisation can occur at an individual or cluster (site/region) level.

Non-randomised controlled trials

Investigators allocate participants to the different groups that are being compared using a method that is not random.

Controlled before-and-after studies

Decisions about allocation to the different comparison groups are not made by the investigators. Outcomes of interest are measured in both the intervention and control groups before the intervention is introduced and again after the intervention has been introduced.

Interrupted time series design

Provides a method of measuring the effect of an intervention when randomisation or identification of a control group are impractical. Multiple data points are collected before and after the intervention and the intervention effect is measured against the pre-intervention trend.

concepts of the review were identified by scanning the background literature and browsing the MEDLINE medical subject heading thesaurus, and through discussion with collaborating colleagues at the University of York's Centre for Reviews and Dissemination.

A search strategy was developed in MEDLINE, using an iterative approach tested against a set of 15 studies known to be relevant to our review. This MEDLINE search strategy was adapted to run on all other databases designated in our protocol.

Electronic searches were undertaken on the following health and allied health databases:

- MEDLINE (accessed 18 March 2015 via OvidSP; www.ovissp.ovid.com)
- EMBASE (accessed 18 March 2015 via OvidSP; www.ovissp.ovid.com)
- PsycINFO (accessed 17 March 2015 via OvidSP; www.ovissp.ovid.com)
- Cumulative Index to Nursing and Allied Health Literature (CINAHL; accessed 19 March 2015 via EBSCO*host*; www.search.ebscohost.com)
- ISI Web of Science, including Social Sciences Citation Index (SSCI) and Science Citation Index Expanded (accessed 19 March 2015 via Web of Science; www.wos.mimas.ac.uk)
- NHS Economic Evaluation Database (NHS EED) (accessed 18 March 2015 via Wiley Online Library)
- The Cochrane Library, including Cochrane Database of Systematic Reviews (CDSR), Database of Abstracts of Reviews of Effects (DARE) and Cochrane Central Register of Controlled Trials (CENTRAL) (accessed 18 March 2015 via Wiley Online Library)
- Health Technology Assessment database (accessed 18 March 2015 via Wiley Online Library)
- Paediatric Economic Database Evaluation (PEDE) (accessed 31 March 2015 via http://pede.ccb.sickkids.ca/pede/index.jsp)
- the IDEAS database of economic and finance research (accessed 31 March 2015 via http://ideas.repec.org).

All databases were searched from inception. No language or design restrictions were applied. Full details of the search strategies, search terms and the specific dates of individual searches are reported in *Appendix 1*.

Additional search strategies included scanning the bibliographies of all relevant retrieved articles, targeted author searches (for additional publications and/or unpublished data identified in conference abstracts) and forward citation searching. No studies were identified that had not been retrieved by other means.

Changes to the search protocol

All searches were conducted as specified in the original review protocol with the exception of the Health Economic Evaluations Database (HEED). HEED ceased publication prior to study commencement and was not searched as part of the final review. Coverage of the relevant economic evidence base was ensured through searches of the NHS EED, the Health Technology Assessment database, the PEDE and the IDEAS database of economic and finance research. The potential impact of this protocol change was judged to be minimal.

Study screening and selection

With the exception of the IDEAS database, all records retrieved from the electronic searches were imported into a bibliographic referencing software program (EndNote X5; Thomson Reuters, CA, USA) and duplicate references identified and removed. Review screening and eligibility judgements were managed in Covidence systematic review software (Veritas Health Innovation, Melbourne, VIC, Australia). Pairs of reviewers independently screened all titles and abstracts for eligibility using prespecified inclusion criteria described below. Additional economic abstracts located through IDEAS were managed as hard-copy records and independently screened for eligibility by two reviewers using identical eligibility criteria.

To be eligible for full-text screening, search records (titles and abstracts) had to fulfil three initial inclusion criteria:

1. RCT, nRCT or eligible quasi-experimental design
2. children or young people with a LTC as participants/possible participants
3. a potential self-care support intervention.

Where both reviewers agreed that the studies did not meet these criteria, studies were excluded from the review. When both reviewers agreed on inclusion, or when there was conflict, full-text articles were retrieved for review. All studies without abstracts were retained for full-text screening unless they could be reliably excluded on the basis of their title alone.

Two reviewers independently assessed all full-text articles against the review's full list of eligibility criteria (see *Box 1*). Any remaining disagreements were resolved by third party discussion.

Data extraction and quality assessment

Data extraction used prespecified data extraction sheets designed and piloted specifically for this study. We extracted data on the study author, year of publication, study design and setting, and relevant characteristics of the population, intervention(s), comparison(s) and outcomes reported. We separately extracted data on the methods and economic perspective used in the subset of studies reporting formal cost-effectiveness, cost–utility or cost–benefit analyses. Where available, we extracted published data on the 'reach' of self-care interventions, defined according to Reach, Effectiveness, Adoption, Implementation, Maintenance (RE-AIM) guidance.[66] Intervention reach was defined in terms of (1) the proportion of eligible patients who did not take part in the study; and (2) the presence or absence of LTCs additional to the index condition in the study exclusion criteria.

Data extraction for study context was undertaken by one reviewer and independently verified by a second reviewer. Study outcomes were extracted independently by two reviewers using separate outcome extraction sheets. Discrepancies in the extracted data were resolved by referral to the original studies and, where necessary, arbitration by a third reviewer.

Where multiple outcomes were reported by the same study, we used a decision rule to determine, in advance, the most relevant outcome for meta-analysis. Our priority was on children and young people's own subjective assessment of QoL. Where this was not reported, we extracted, in order of priority, parent-reported QoL, patient-reported symptoms or parent-reported symptoms. If two or more outcomes of equal priority were available, we selected the one with most complete reporting and prioritised continuous over dichotomous data.

When there were multiple publications for the same study, data were extracted from the most recent and complete publication. In cases where the duplicate publications reported additional relevant data, these data were also extracted.

Methodological quality appraisal

Methodological quality appraisals were undertaken by one reviewer and independently verified by a second reviewer. Studies were assessed for methodological quality using the Cochrane Collaboration Risk of Bias Assessment Tool for RCTs[62] or the Cochrane guidance for non-randomised designs.[62] Economic studies were assessed using a critical appraisal checklist for economic evaluations. This checklist was based on Drummond's checklist for assessing economic evaluations[67] and was adapted to capture more fully the quality of economic evaluations in self-care support interventions (see *Appendix 2*).

Quality ratings for randomised studies were based on a dichotomous measure of allocation concealment (i.e. adequate or inadequate/unclear). Allocation concealment is the aspect of trial quality most consistently associated with treatment effect.[68,69] Other indicators may be less relevant in trials of behavioural interventions where participant, personnel and outcome blinding are often difficult to achieve.

Data preparation and analysis

The aim of our review was to establish which models of self-care support (if any) were associated with significant reductions in health service utilisation without compromising outcomes for children and young people with long-term physical or mental health conditions. To answer this question, studies needed to quantify the effect of an intervention on both costs and health outcomes.

Accurate placement of studies on a cost-effectiveness plane requires detailed data beyond a simple text description of statistical significance. We sought data that would enable the calculation of standardised effect sizes (ESs) for both health outcomes and costs. ES calculations are possible when primary research studies report appropriate statistics which can be translated into a common metric, such as a standardised mean difference.[70]

We selected outcomes closest to a 12-month follow-up. Our choice of follow-up point was, to an extent, arbitrary, balancing analysis of longer-term effects with the consistency of data between studies. Continuous measures were translated to a standardised mean difference [the mean of the intervention group minus the mean of the control group, divided by the pooled standard deviation (SD)]. Outcomes were coded so that negative ESs always represented improvements for the intervention compared with control. Outcomes reported as dichotomous variables were translated to a standardised mean difference using the logit transformation.

We assumed a 70% follow-up from the number of participants randomised at baseline, where sample size could not be ascertained. This was an arbitrary imputation that sought to maximise the inclusion of data, using a value below that usually considered as an indicator of primary study quality (80%).

Where single parameters were missing (e.g. a SD), we imputed these where there was other comparable data in the review. We excluded studies that lacked data and where there were no other studies in the review to allow meaningful imputation. Calculation of ESs was not possible for all outcomes.

Measures of health-care utilisation (e.g. length of hospital stays) and costs can often demonstrate significant skew because many patients report low costs, but a small proportion can have disproportionately high levels of use. In line with other published reviews,[26,71] we identified all outcomes where the SD multiplied by two was greater than the mean, as in these cases it is argued that the mean is not a good indicator of the centre of the distribution.[72]

When studies reported multiple comparisons that were eligible for the same meta-analysis (e.g. two types of intervention vs. control), both comparisons were included, but sample sizes in the control group were halved to avoid 'double counting' of participants in the control group and thus inappropriate precision in the relevant meta-analysis. This method assumed independent ESs. We conducted the sample size modification in all cases where a study included two or more intervention groups compared with control and where more than one of those intervention groups was included in the same meta-analysis.

A minority of self-care support trials ($n = 10$) used cluster allocation to reduce bias associated with contamination. We identified cluster trials and adjusted the effective sample size (and thus the precision) of these comparisons using methods recommended by the EPOC group of the Cochrane Collaboration.[63] We assumed an intraclass correlation of 0.02.

Where sufficient data were reported for particular comparisons, and when populations and interventions were considered sufficiently homogeneous, we pooled effects. We pooled QoL and subjective symptom measures and did not explore differences in the effects of self-care support observed with different outcome measures.

Owing to marked heterogeneity in the interventions and outcomes, meta-analyses used random-effects modelling, with the I^2 statistic to estimate heterogeneity.[73] We labelled ESs as minimal (an ES of < 0.2), small (an ES of $0.2 < 0.5$), moderate (an ES of $0.5 < 0.8$) or large (an ES of ≥ 0.8) and levels of heterogeneity as 'low' (I^2 statistic 1–25%), 'moderate' (I^2 statistic 26–74%) or 'high' (I^2 statistic $\geq$ 75%). These categorisations are arbitrary distinctions. However, caution should be applied in the interpretation of pooled effects in meta-analyses where heterogeneity is 'high'.

Small study bias

Funnel plots[74] using standard errors[75] and associated regression tests were used to explore small-study bias where sufficient data were available. The purpose of a funnel plot is to map standardised ESs from individual studies against their standard error (i.e. the underlying precision of the observed effect). A funnel plot is based on the premise that precision in an ES estimate will increase as sample size increases. Effect estimates from smaller studies with larger standard errors should, therefore, scatter more widely at the bottom of the plot. Larger studies with smaller standard error should display a narrower spread. Bias is suggested by an asymmetrical plot and statistical testing of a potential relationship between treatment effect and precision. An absence of smaller studies without statistically significant effects is an indicator of potential publication bias. In this situation, the effect calculated in a meta-analysis may overestimate the intervention effect.

Changes to the analytical protocol

Our analysis was designed to consider the ability of models of self-care to reduce health-care costs without compromising patient outcomes. Our primary analysis was on total costs. Our protocol stipulated that our secondary analyses would, where data allowed, consider all other major types of resource use and cost. This included inpatient, outpatient, primary care, community care and patient out-of-pocket expenditures.

Meaningful analysis requires that sufficient, comparable data are reported across the primary studies. Lack of consistent measurement and ambiguity in some of the outcomes that were reported prevented accurate demarcation of primary, secondary and community health-care costs. More usually, outcome data were presented as urgent (non-scheduled) compared with scheduled service use. Definitions of scheduled resource use varied according to illness type and context.

Our PPI advisory panel identified hospital admissions, ED visits and patient and families' out-of-pocket expenses as the three outcomes that they would like to be prioritised in our review. An insufficient number of studies reported out-of-pocket expenses. Our secondary analyses thus focused on hospital admissions and ED use.

Hospital use represents a significant driver of total costs in most health-care systems. However, focusing on a single source of utilisation leaves the analysis vulnerable to cost shifting, where any benefits found in terms of reduced hospital use may mask increased costs elsewhere in the health-care system (such as in community care). Our primary analysis thus remained focused on total costs.

Data presentation

We present the results of included studies according to a permutation plot (see *Chapter 1*, *Figure 2*). The permutation plot presents data from all studies reporting both outcomes (i.e. QoL and total costs, QoL and hospital admissions, and QoL and emergency care). Each plot shows the pattern of results at the level of the individual study and gives a visual impression of the distribution of studies across the cost-effectiveness plane. The plot distinguishes between studies in the appropriate quadrant (i.e. those that reduce costs without compromising outcomes), from those in problematic quadrants (i.e. those that reduce costs but also compromise outcomes, or those that compromise both outcomes and costs).

We analysed data for included studies as a whole and then conducted meaningful subgroup analyses. A priori subgroup analyses were conducted for level of evidence quality (defined as the adequacy of allocation concealment) and the age of the children and young people. Subgroup analyses for age classified studies according to whether they delivered self-care support to children (aged < 13 years), adolescents (aged ≥ 13 years) or a mixed child–adolescent age group.

Additional subgroup analyses were conducted for the type of LTC and the setting and type of self-care support intervention that was evaluated (i.e. intervention target, format, delivery method and intensity). The subgroups that we used for these preplanned analyses were determined post hoc, based on the nature and distribution of the evidence.

Post hoc classification by long-term condition

We grouped different LTCs post hoc into four conceptually and clinically relevant categories. These categories were asthma, other (non-asthma) physical health conditions, behavioural disorders and mental health.

Our a priori intention was to also aggregate data across subtypes or 'clusters' of conditions, based on a similar typology to that developed by the Practical systematic Revlew of Self-Management Support for long-term conditions (PRISMS) study for adults with LTCs.[26] We did not aggregate our data in this way, as all but four studies focusing on behavioural disorders fell into the same condition cluster (cluster 1: LTCs with marked variability in symptoms over time).

Post hoc classification by intervention type

Existing typologies of self-care support for children and young people with LTCs highlight the importance of considering different aspects and characteristics of the intervention, including its target, location, facilitation and delivery methods.[31]

We conducted subgroup analyses based on intervention target (child and/or young person, adult or both), format (individual, group or mixed) and delivery method (face to face, remote or mixed model). We also conducted subgroup analyses on intervention setting, defined as inpatient, outpatient/clinic, school or community, home or mixed location.

In line with our previous review of self-care support for adults with LTCs,[26] we included interventions across the spectrum of care and distinguished post hoc between the different intensities and types of self-care support that were provided.

We used a similar approach to classify intervention intensity as we used in our previous review, with post hoc amendments to accommodate the level and type of intervention descriptions provided in our primary studies. Our final classification system was informed and approved by our PPI advisory panels and distinguished between four different categories of self-care support:

1. 'Pure' self-care support for interventions providing self-care support through a stand-alone resource (e.g. interactive mobile application or educational online program).
2. Facilitated self-care support for interventions providing fewer than four sessions or < 2 hours of face-to-face or remote self-care support. Support is provided by a designated self-care agent (e.g. health professional or peer) and usually targets a single group (e.g. children or parents). The support provided will often be (but is not limited to) self-care education, feedback or care plan review.
3. Intensively facilitated self-care support for interventions providing regular and repeated contact exceeding more than four sessions or 2 hours' support in total. Support is provided by a designated self-care agent health professional or peer and often targets multiple groups (e.g. children and parents or children and teachers). The support provided will often be multifaceted and may include some co-ordination of a patient's primary or standard care.
4. Case management for interventions providing more than four sessions or 2 hours of additional support from a designated agent, with additional support from a multidisciplinary team and explicit referrals or care co-ordination as part of the intervention protocol.

Two authors independently assessed the type, and content, of each self-care support intervention. Disagreements were identified and resolved via team discussion.

Changes to the review protocol

The review protocol is available as part of the PROSPERO database: A Rapid Evidence synthesis of Outcomes and Care Utilisation following Self-care support for children and adolescents with long-term conditions (REfOCUS): reducing care utilisation without compromising health outcomes (registration number CRD42014015452). We have been explicit about any deviations from the published protocol in the relevant sections of this report. Deviations of the review from the protocol published in PROSPERO are summarised in *Box 5*.

Patient and public involvement

This review was conducted in collaboration with two PPI advisory panels: an adult panel composed of eight parents and health professionals working with children and young people with LTCs; and a children and young people's panel composed of 12 young people living with a long-term physical or mental health condition. Panel members were recruited from local NHS trusts, children and young people's physical and mental health services, user and carer organisations (e.g. YoungMinds, Asthma UK, Diabetes UK), allied organisations (e.g. the Mental Health Research Network's Young Person's Mental Health Advisory Group) and existing networks within the research team. All lay members were reimbursed for their time and travel expenses.

BOX 5 Deviations from original PROSPERO protocol

We will search specialist economic databases including the NHS EED, the HEED, the Health Technology Assessment database, the PEDE and the IDEAS database of economic and finance research.

- The HEED was not searched as part of the final review.

We will structure our synthesis according to the LTCs prioritised by previous reviews (i.e. diabetes, asthma, cystic fibrosis, anxiety and depression). We will include other LTCs in our synthesis where we identify eligible economic evidence (e.g. epilepsy, juvenile idiopathic arthritis, ADHD, eating disorders and self-harm).

- We structured our synthesis according to the availability of data. We grouped studies in a way that was conceptually and clinically relevant.

Our primary analysis will be on total costs. We will repeat this analysis for all major types of costs (e.g. inpatients, outpatients, primary care, community care and out-of-pocket expenditure).

- As stipulated, our primary analysis was on total costs. We only conducted secondary analyses where data allowed and where the costs were sufficiently similar to make meta-analyses appropriate and interpretable. Our secondary analysis focused on hospital admissions and urgent care.

We will extract data to assist in the quality assessment of primary studies according to the Cochrane risk-of-bias tool criteria for RCT and nRCT designs.

- In line with other published reviews, we restricted our assessment of risk of bias to allocation concealment, independently assessed by two members of the research team.

We intend to aggregate data at several different levels (i.e. within a condition, across subtypes or 'clusters' of conditions and across all conditions).

- We aggregated data across all conditions and within four post hoc categories of LTCs. Data did not allow for meaningful aggregation at the level of condition clusters.

We will distinguish between groups of interventions differing in content (e.g. psychological support, skills training, health monitoring and feedback).

- We classified interventions post hoc into four broad categories of intervention types. Insufficient data were available to enable meaningful analysis at the level that was originally specified.

ADHD, attention deficit hyperactivity disorder.

Four panel meetings were held for 1–2 hours on each occasion throughout the course of the review. Meetings took place on university premises and were attended by members of the research team. Two representatives from the children and young people's panel attended the adult PPI panel meetings to provide a link between the two groups and ensure coherence and continuity in topic discussions.

The initial meeting for both panels was focused on establishing relationships, orientating panel members to the project, and developing and agreeing terms of reference for participation. The second meeting was led by the children and young people and was, at their own request, focused on developing a patient-centred logo and tagline for the project. The final logo and tagline, 'Our Services, My Health' were selected by PPI consensus and feature on all project resources and dissemination materials.

The third meeting was dedicated to developing the frameworks and priorities for the review. This process included PPI approval of the taxonomies used to classify self-care support interventions and the clusters of LTCs that fed through into the analyses. In collaboration with members of the research team, PPI panel members participated in an interactive discussion designed to explore lay interpretations of a systematic review simultaneously assessing patient outcomes and health-care costs. PPI panel members developed a framework depicting the impact of living with a LTC from the perspective of children, young people and their families (*Figure 3*). This was used to select meaningful patient-centred outcomes for extraction and analysis in the review and may be used to contextualise the remit and scope of this report within a broader sphere of the potential costs incurred by LTC management. This issue is discussed further in *Chapter 4*.

At the fourth and final meeting, advisory panel members discussed the findings of the review and interpreted their meaning for services and for children, young people and their families. Panel members assisted in formulating and prioritising evidence-based recommendations for service commissioners and research funding bodies, ensuring that these remained relevant to stakeholder priorities. All recommendations arising from this review are detailed in *Chapter 4*.

Chapter 3 presents the review's results.

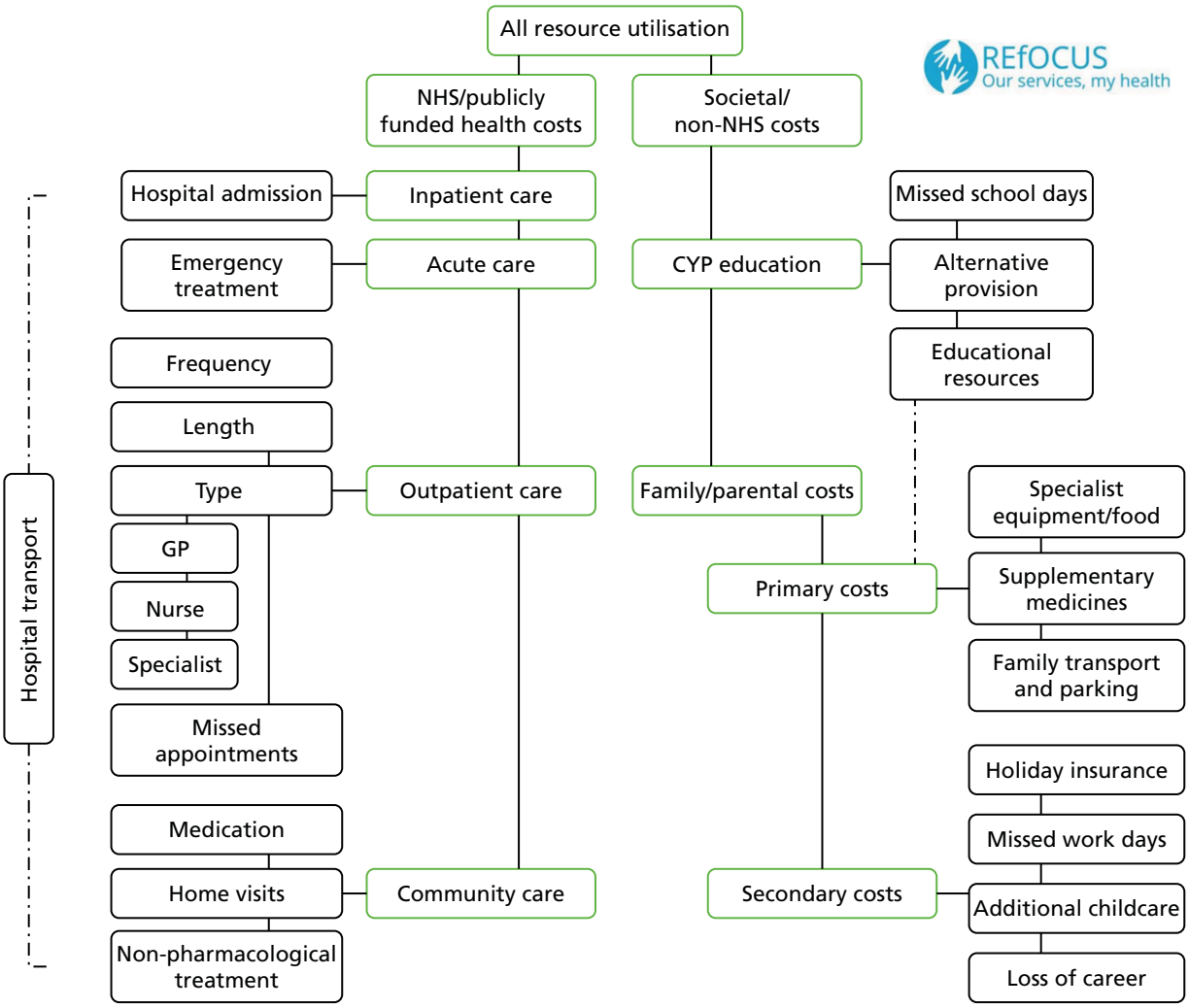


FIGURE 3 Key determinants of resource utilisation in children and young people with long-term physical and mental health conditions: a PPI perspective. CYP, children and young people; GP, general practitioner.

Chapter 3 Results

Overview of the evidence base

We screened 36,493 unique records for eligibility; 127 papers reporting on 97 studies were included.[20,21,76–200] *Figure 4* presents the flow of studies through the review. A full list of the included studies and their study reference details is provided in *Appendix 3*. Excluded studies and the reasons for their exclusion are provided in *Appendix 4*.

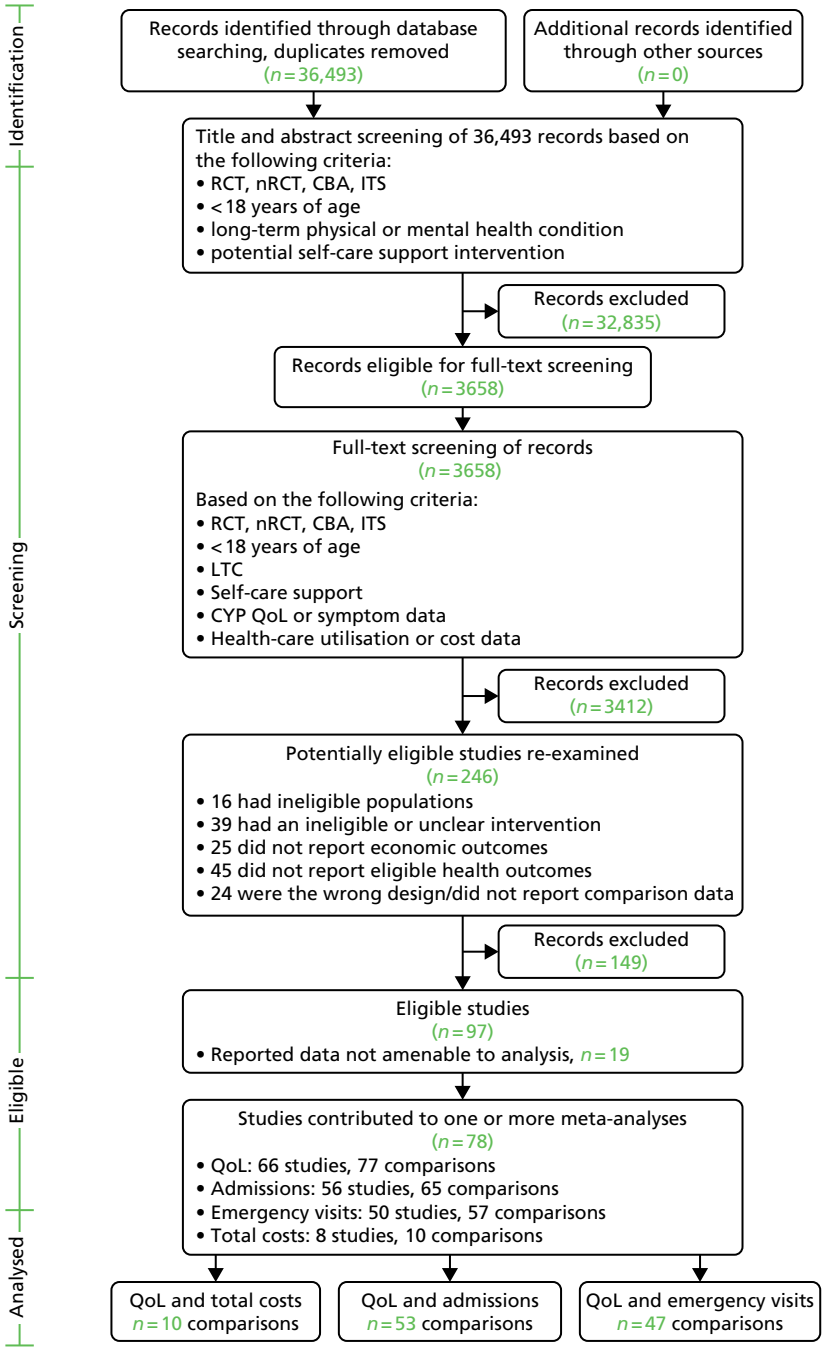


FIGURE 4 Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram: flow of studies through the review. CYP, children and young people.

The included studies comprised 77 RCTs, 10 cluster RCTs, four nRCTs and six quasi-experimental (CBA) designs. Thirty-seven trials (38%) were rated as high quality (i.e. at low risk of bias) on the basis of adequate randomisation and allocation concealment procedures. Fourteen studies (14%) were conducted in the UK. Full details of the data extracted from individual studies (i.e. population characteristics, conditions, comparisons and design) are provided in *Appendices 5–8* and summarised in *Table 1*. Formal economic analyses were reported by a subset of studies ($n = 35$, 36%). This subset is listed in *Appendix 9*, which provides detailed information on the design and quality of the economic analyses.

The vast majority of included studies recruited children and young people with physical health conditions ($n = 77$, 76%), predominantly asthma ($n = 66$, 68%). Long-term mental health conditions were also represented ($n = 18$, 19%), split between depression and anxiety ($n = 6$), psychosis or schizophrenia ($n = 3$), self-harm or suicide ($n = 6$) and eating disorders ($n = 3$). Most studies ($n = 42$, 43%) recruited across a broad age continuum (e.g. included both children and young people).

The majority of the interventions that were evaluated were intensively facilitated self-care support or case management, requiring more than four sessions or 2 hours of total contact from a health professional and/or other self-care agent. As might be expected in this population, the majority of interventions targeted adult caregivers, either together or in parallel with children and young people. Self-care support interventions were most typically delivered face to face to individuals or individual families, in either an outpatient setting or a patient's home. Most studies delivered self-care support in addition to usual care and compared its effects with usual care alone.

TABLE 1 Basic descriptive data on the studies

Category	Characteristic	*n* (%) or mean (SD)
Study context	UK	14 (14.4)
	European	18 (18.6)
	US/Canadian	54 (55.7)
	Mixed/other	11 (11.3)
Baseline sample size	Mean (SD)	215 (209)
	Range	10–1316
Quality rating	Adequate allocation concealment	37 (38.1)
Population	Asthma	66 (68.0)
	Diabetes	6 (6.2)
	Other physical health	2 (2.1)
	Mental health	18 (18.6)
	ADHD/behavioural difficulties	5 (5.2)
	Children (aged 0–12 years)	32 (33.0)
	Young people (aged 13–18 years)	23 (23.7)
	Mixed children and young people	42 (43.3)
	Mean (SD) CYP age (years)	10.12 (3.9)[a]
	% CYP male	53.4[b]
Intervention content[c]	Pure	5 (4.3)
	Facilitated	26 (22.8)
	Intensively facilitated	74 (64.9)
	Case managed	9 (7.9)

TABLE 1 Basic descriptive data on the studies (*continued*)

Category	Characteristic	*n* (%) or mean (SD)
Intervention target[c]	CYP	32 (28.0)
	Parents/adult caregivers	9 (7.9)
	Mixed	73 (64.0)
Intervention setting[c]	Health (inpatient)	6 (5.3)
	Health (outpatient/clinic)	49 (43.0)
	Home	31 (27.2)
	School/community	18 (15.8)
	Mixed	10 (8.8)
Intervention delivery[c]	Face to face	94 (82.5)
	Remote	13 (11.4)
	Mixed	7 (6.1)
Intervention format[c]	Individual	77 (67.5)
	Group	25 (21.9)
	Mixed	12 (10.5)

ADHD, attention deficit hyperactivity disorder; CYP, children and young people.
a Nine studies did not report age.
b Seven studies did not report gender.
c Percentages for study characteristics calculated on 97 studies, percentages for intervention characteristics calculated on 114 comparisons.

Overall pattern of the results

Sixty-four studies, reporting on 77 comparisons, provided QoL outcome data in a form suitable for meta-analysis. The number of studies contributing data to a meta-analysis of health service costs was limited ($n = 10$ comparisons), restricting the utility of our primary analysis. A greater number of studies contributed data on hospital admissions (65 comparisons) and ED visits (57 comparisons), facilitating more meaningful interpretation of these outcomes (*Table 2*).

The meta-analysis of all study data demonstrated that self-care support was associated with statistically significant but minimal improvements in QoL [ES –0.17, 95% confidence interval (CI) –0.23 to –0.11], with moderate variation across trials (*Figure 5*). Self-care support was associated with minimal but statistically significant reductions in ED use (ES –0.11, 95% CI 0.17 to 0.04) (*Figure 6*). Meta-analyses showed minimal, statistically non-significant reductions in hospital admissions (ES –0.05, 95% CI –0.12 to 0.03)

TABLE 2 Results of meta-analysis (all eligible studies)

Outcome	ES	95% CI	I^2 statistic (%)	Number of comparisons
QoL	–0.17	–0.23 to –0.11	48	77
Hospital admissions	–0.05	–0.12 to 0.03	35	65
Emergency visits	–0.11	–0.17 to –0.04	38	57
Total costs	–0.11	–0.47 to 0.25	92	10

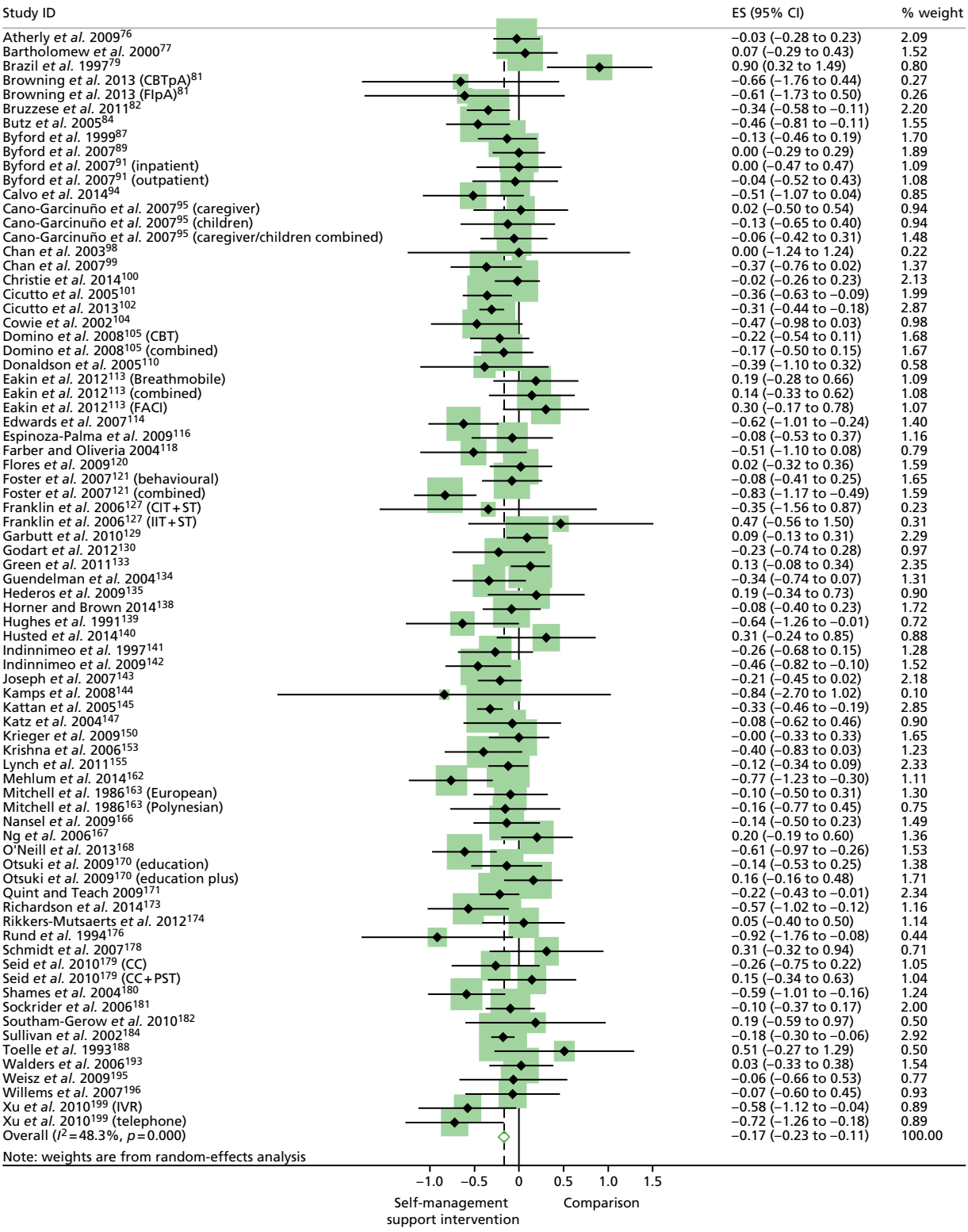


FIGURE 5 Forest plot: QoL. CBT, cognitive–behavioural therapy; CBTpA, Cognitive Behavioural Therapy for Adolescents with Psychosis; CC, care co-ordination; CIT, conventional insulin therapy; FACI, Facilitated Asthma Communication Initiative; FipA, family intervention in adolescent inpatients with psychosis; IIT, intensive insulin therapy; IVR, interactive voice response; PST, problem-solving skills training; ST, Sweet Talk.

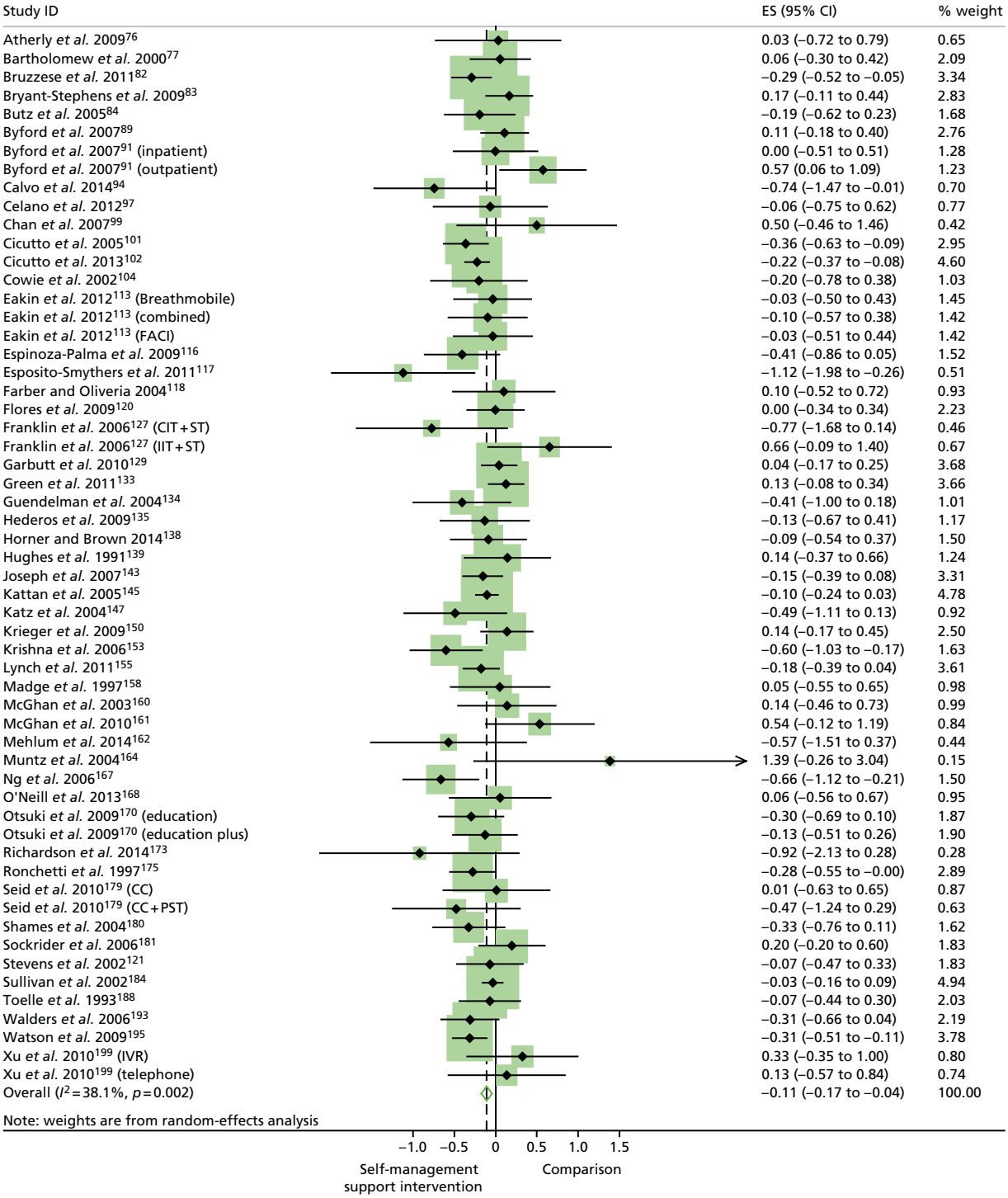


FIGURE 6 Forest plot: emergency visits. CC, care co-ordination; CIT, conventional insulin therapy; FACI, Facilitated Asthma Communication Initiative; IIT, intensive insulin therapy; IVR, interactive voice response; PST, problem-solving skills training; ST, Sweet Talk.

(*Figure 7*) and total health service costs (ES –0.11, 95% CI –0.47 to 0.25) (*Figure 8*). Pooled estimates for total health service costs were based on a small number of comparisons with high variation across trials. Subgroup analyses were used to explore the different characteristics of self-care support that may be associated with each of these outcomes (these are detailed in *Analyses of different types of self-care support*, *Table 9*).

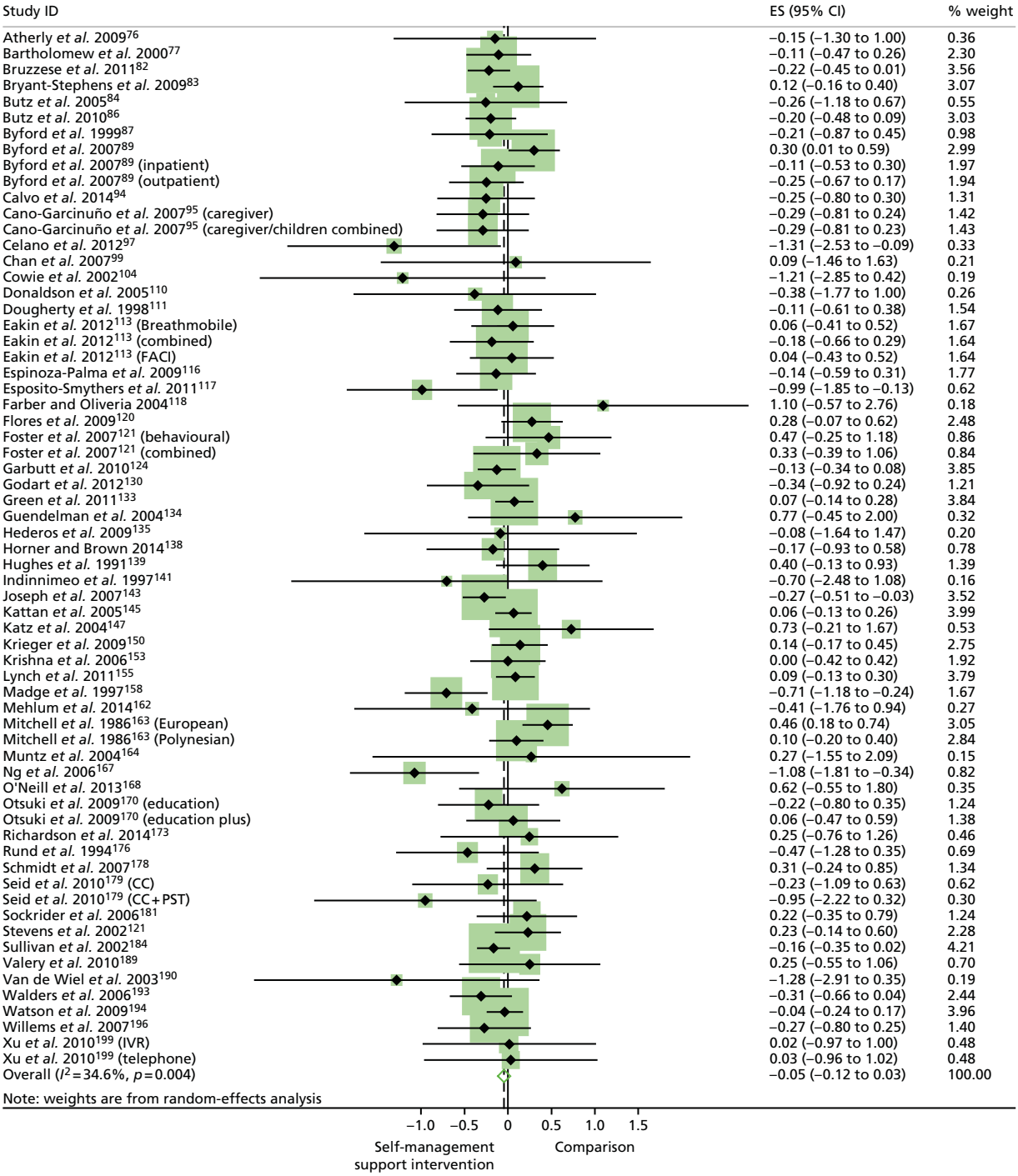


FIGURE 7 Forest plot: hospital admissions. CC, care co-ordination; FACI, Facilitated Asthma Communication Initiative; IVR, interactive voice response; PST, problem-solving skills training.

Primary analysis: quality of life and total health service costs

Total health service costs were infrequently reported. Only eight studies reporting 10 comparisons were eligible for inclusion in a permutation plot that simultaneously charted the effects of self-care support on children and young people QoL and total health-care costs (*Figure 9*). Six of these comparisons were rated as being at a low risk of bias.

When effects were plotted against each other, the comparisons were primarily distributed across the left-hand quadrants of the plot, suggesting that self-care support interventions currently demonstrate high variability in terms of economic effect, but typically confer minimal to small improvements for QoL.

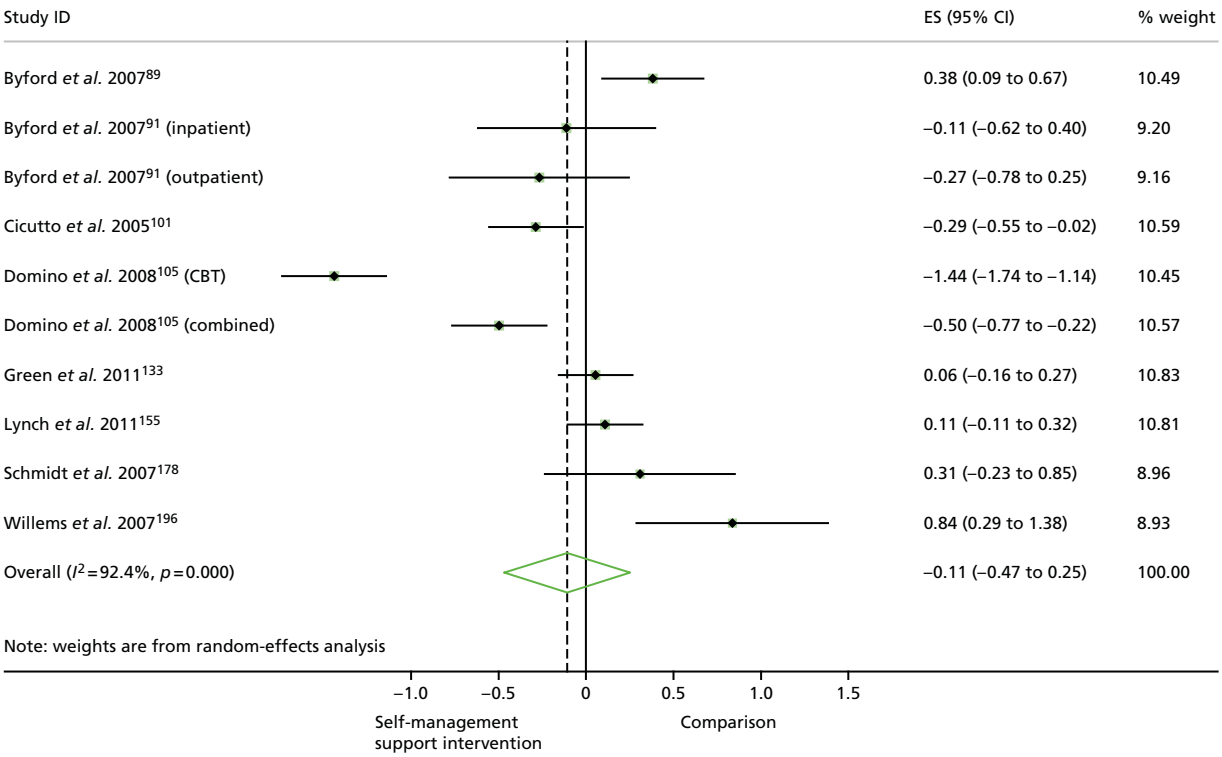


FIGURE 8 Forest plot: total costs. CBT, cognitive–behavioural therapy.

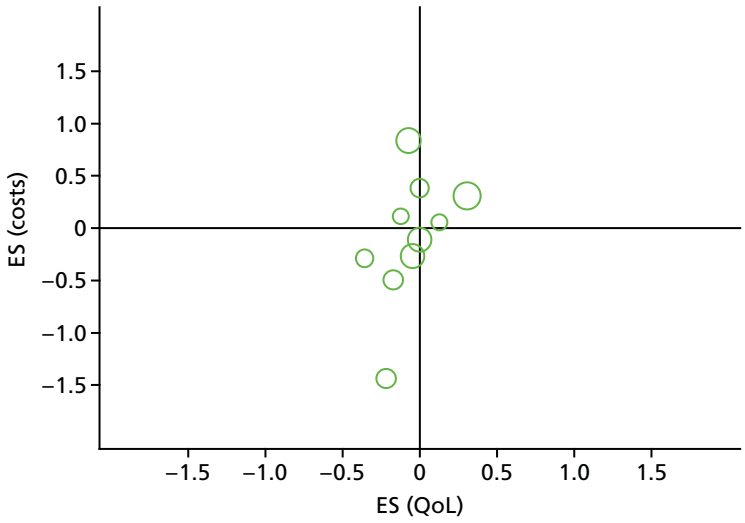


FIGURE 9 Permutation plot of QoL and costs.

This conclusion is based on limited data and must be treated with caution. The circles in the permutation plots are an illustrative indicator of their relative 'weight' in the analysis. Permutation plots do not consider uncertainty around individual study point estimates which, in some instances, may be marked. Almost all studies reporting total costs (eight comparisons) demonstrated significant skew in either control or intervention outcome data.

Quality of life and hospital admissions

Fifty-three comparisons were eligible for inclusion in a permutation plot charting the effects of self-care support on QoL and hospital admissions (*Figure 10*); 29 of these comparisons originated from RCTs with adequate allocation concealment.

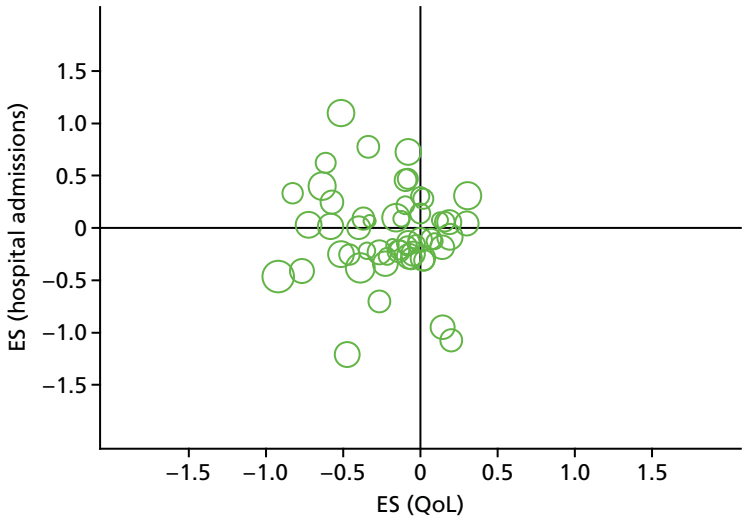


FIGURE 10 Permutation plot of QoL and hospital admissions.

When hospital admissions were plotted against patient outcomes, most comparisons were distributed on the left-hand side, spanning both the lower and upper left-hand quadrants. This suggests that, on the basis of the available evidence, self-care support for children and young people is likely to be associated with improvements in QoL, but variable effects on hospital admissions. A minority of studies was located in the lower right-hand quadrant, suggesting reduced hospital admissions, but a marginally compromised QoL. As stated previously, permutation plots do not consider the magnitude of uncertainty around individual study point estimates and, for some studies in the current analysis, this uncertainty may be marked.

Quality of life and emergency department visits

Emergency department visits were identified by our PPI panel as a particularly important aspect of health service utilisation for children, young people and their parents. Forty-seven comparisons were eligible for inclusion in this permutation plot (*Figure 11*); 24 were from RCTs with adequate allocation concealment.

When emergency visits were plotted against patient outcomes, the majority of studies fell in the lower left-hand quadrant, demonstrating that self-care support can reduce ED use without routinely compromising children and young people's QoL. Fewer studies report reduced emergency visits with decrements in QoL (lower right-hand quadrant) or significant improvements in QoL associated with increased service use (upper left-hand quadrant).

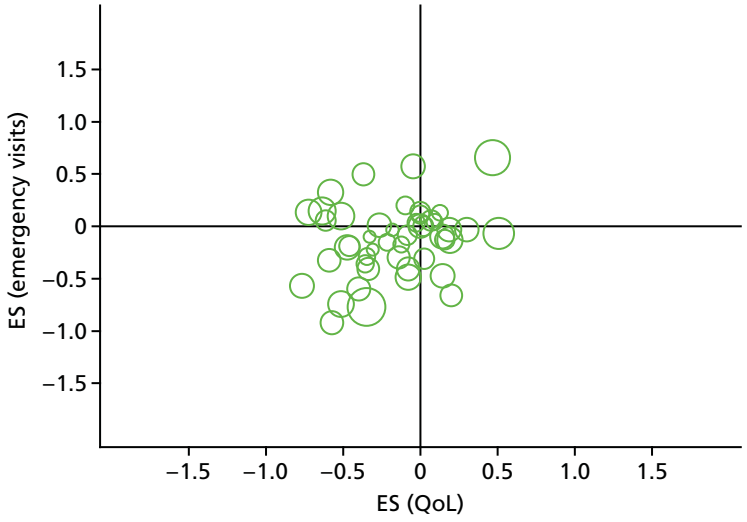


FIGURE 11 Permutation plot of QoL and emergency visits.

Analysis by long-term condition

Included studies were categorised into one of four broad groups based on the type of LTC: asthma, other physical health, mental health and behavioural difficulties. These groups were determined post hoc according to the nature of the evidence that was identified.

Asthma

Sixty-six studies evaluated self-care support for children and young people with asthma. The flow of studies through the review is depicted in *Figure 12*. Pooled effects for each outcome are reported in *Table 3*. Meta-analysis of all asthma studies demonstrated that self-care support was associated with minimal but statistically significant improvements in QoL, with moderate variation across trials. Self-care support was associated with minimal but statistically significant reductions in ED use, with low variation across the studies. Meta-analyses showed no significant effects on hospital admissions. Meaningful interpretation of total cost data was limited by the small number of comparisons ($n = 2$).

Owing to a lack of data, permutation plots were not calculated for total costs. Thirty-eight comparisons were eligible for inclusion in a permutation plot charting the effects of self-care support on QoL and hospital admissions for asthma (*Figure 13*); 16 of these comparisons originated from RCTs with adequate allocation concealment.

When hospital admissions were plotted against patient outcomes, most comparisons were distributed across the lower right- and left-hand quadrants. This suggests that self-care support interventions that reduce the number of hospital admissions for children and young people with asthma will not routinely compromise QoL but, on the basis of the current evidence, such compromises cannot be ruled out.

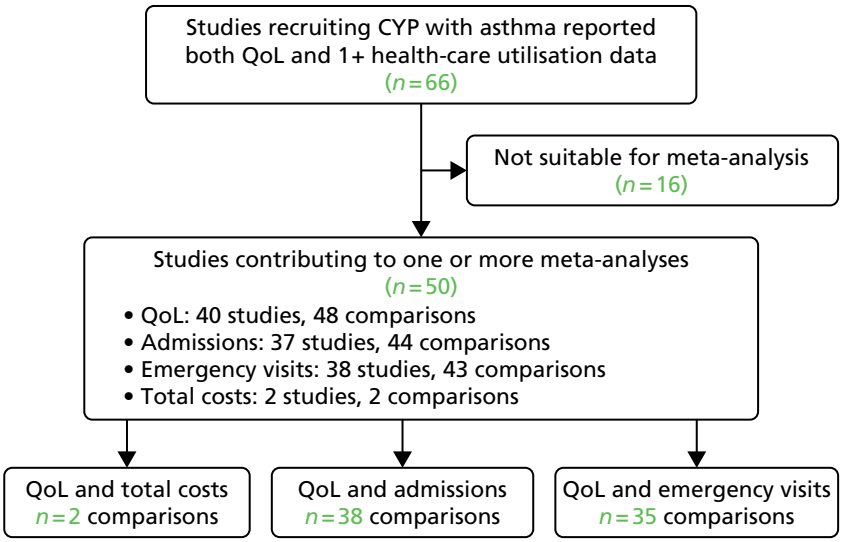


FIGURE 12 Analyses of studies for patients with asthma. CYP, children and young people.

TABLE 3 Results of meta-analysis (all asthma studies)

Outcome	ES	95% CI	I^2 statistic (%)	Number of comparisons
QoL	–0.15	–0.22 to –0.08	45	48
Hospital admissions	–0.06	–0.15 to 0.02	38	44
Emergency visits	–0.12	–0.18 to –0.06	22	43
Total costs	0.25	–0.85 to 1.35	92	2

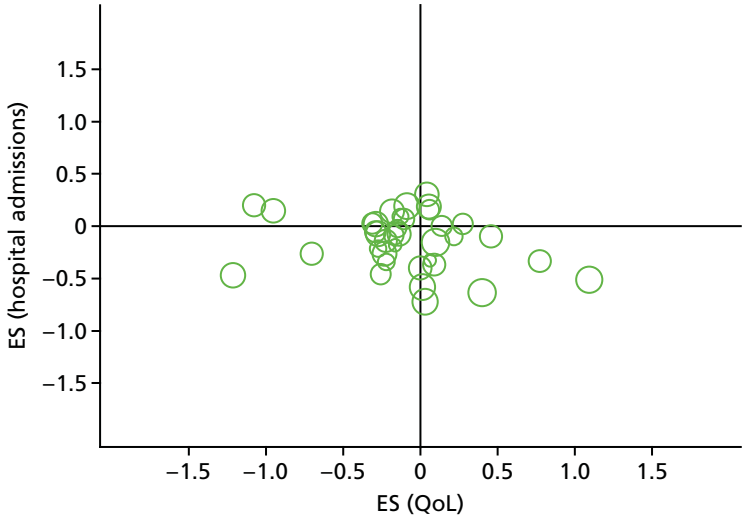


FIGURE 13 Permutation plot of QoL and hospital admissions (asthma).

When emergency visits were plotted against QoL for children and young people with asthma (*Figure 14*), the majority of studies fell in lower left-hand quadrant, demonstrating that self-care support can reduce ED use without compromising children and young people's QoL. A notable number of studies in other quadrants suggested that self-care support interventions may reduce emergency visits with decrements in QoL (lower right-hand quadrant) or improve in QoL but increase service use (upper left-hand quadrant).

Other (non-asthma) physical health conditions

Eight studies evaluated self-care support for children and young people with other physical health conditions. The flow of studies through the review is depicted in *Figure 15*. Owing to the small number of data available for meta-analysis, meaningful interpretation of the evidence base for non-asthma physical health conditions is limited. Pooled ESs are presented in *Table 4* for completeness. Permutation plots are not presented.

Mental health conditions

Eighteen studies evaluated self-care support for children and young people with mental health conditions. The flow of studies through the review is depicted in *Figure 16*. Pooled effects for each outcome are reported in *Table 5*. Meta-analysis of all mental health studies demonstrated that self-care support was associated with minimal but statistically significant improvements in QoL, with moderate variation across trials.

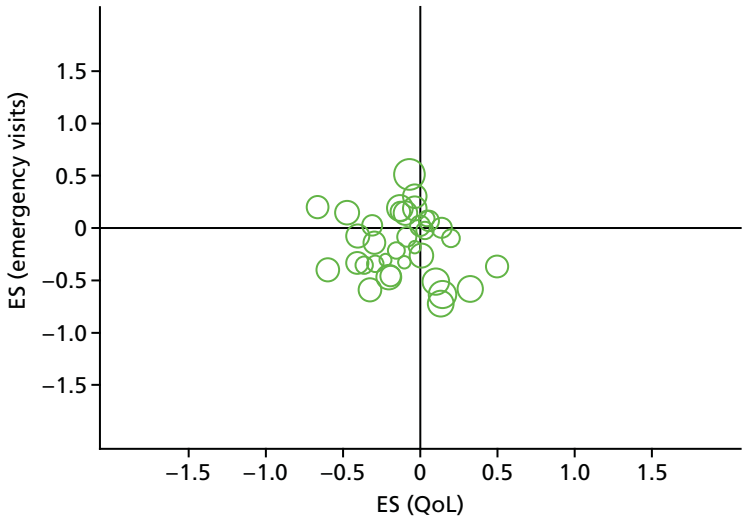


FIGURE 14 Permutation plot of QoL and emergency visits (asthma).

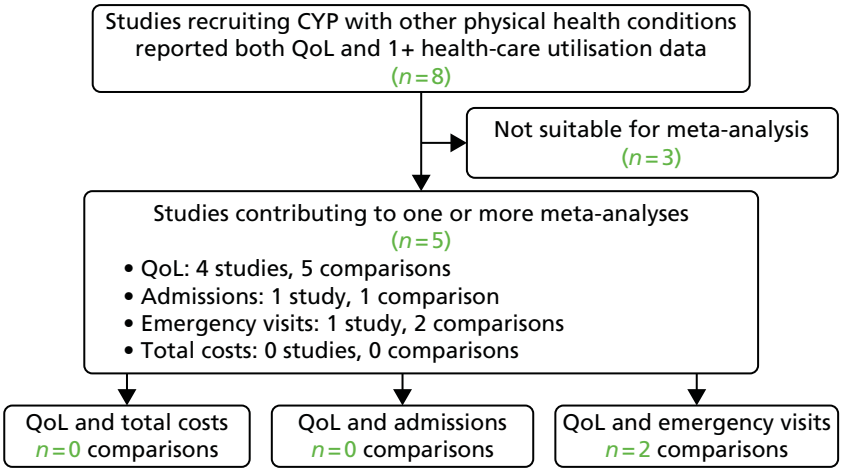


FIGURE 15 Analyses of studies for patients with other (non-asthma) physical health conditions. CYP, children and young people.

TABLE 4 Results of meta-analysis (other physical health conditions)

Outcome	ES	95% CI	I^2 statistic (%)	Number of comparisons
QoL	0.00	–0.18 to 0.19	0	5
Hospital admissions	–0.11	–0.61 to 0.38	–	1
Emergency visits	–0.03	–1.43 to 1.37	82	2
Total costs	–	–	–	0

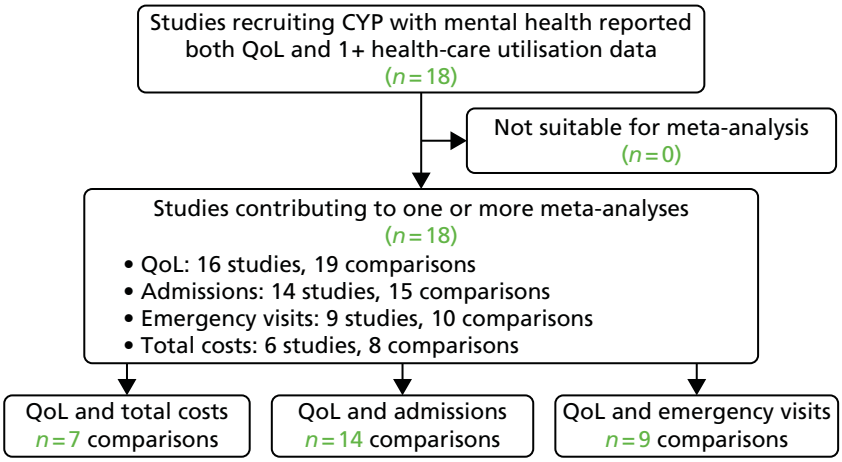


FIGURE 16 Analyses of studies for patients with mental health conditions. CYP, children and young people.

TABLE 5 Results of the meta-analysis (mental health conditions)

Outcome	ES	95% CI	I^2 statistic (%)	Number of comparisons
QoL	–0.17	–0.29 to –0.05	33	20
Hospital admissions	–0.02	–0.17 to 0.14	30	15
Emergency visits	–0.15	–0.39 to 0.09	64	10
Total costs	–0.19	–0.61 to 0.23	93	8

The meta-analyses showed no significant effects on hospital admissions, ED visits or total costs. Meaningful interpretation of total cost data was limited by a small number of comparisons ($n = 8$) and high variation across trials.

Owing to a lack of data, permutation plots were not calculated for total costs. Fourteen comparisons were eligible for inclusion in a permutation plot charting the effects of self-care support on QoL and hospital admissions for mental health (*Figure 17*); 10 of these comparisons originated from RCTs with adequate allocation concealment.

When hospital admissions were plotted against patient outcomes, the majority of comparisons were located in the lower left-hand quadrant, suggesting that self-care support can reduce utilisation for children and young people with mental health conditions without compromising QoL. A minority of studies were located in the lower right-hand quadrant, suggesting reduced hospital admissions but a marginally compromised QoL. As stated previously, data were limited and findings must be treated with caution.

Nine comparisons were eligible for inclusion in a permutation plot charting ED visits against patient outcomes (*Figure 18*); seven were from RCTs with adequate allocation concealment. When emergency visits were plotted against patient outcomes, the majority of studies fell in lower left-hand quadrant, demonstrating that self-care support can reduce ED use without routinely compromising children and young people's QoL. Limited data mean that these results must be treated with caution.

Behavioural difficulties

Five studies evaluated self-care support for children and young people with behavioural difficulties. The flow of studies through the review is depicted in *Figure 19*.

Owing to the small number of data available for meta-analysis, meaningful interpretation of the evidence base for non-asthma physical health conditions is limited. Pooled ESs are presented in *Table 6* for completeness. Permutation plots are not presented. *Table 7* summarises the results of all meta-analyses, presented according to LTC type.

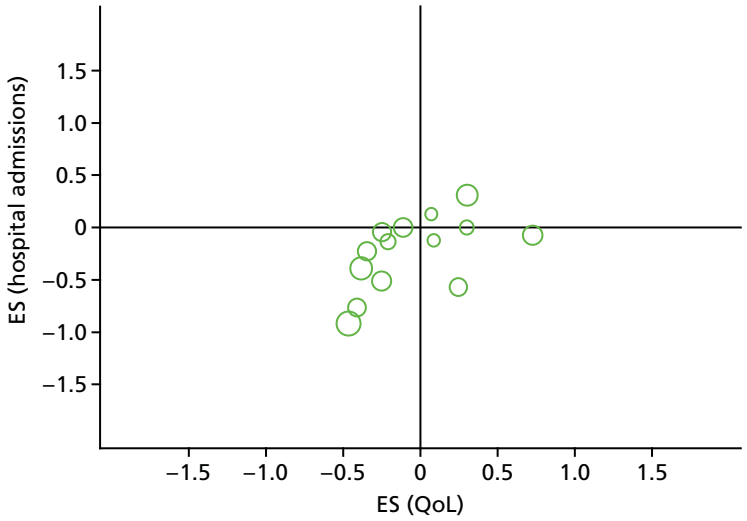


FIGURE 17 Permutation plot of QoL and hospital admissions (mental health conditions).

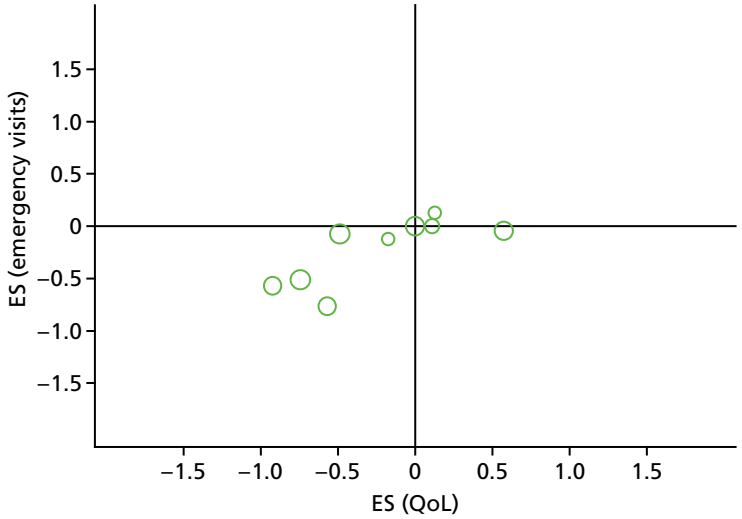


FIGURE 18 Permutation plot of QoL and emergency visits (mental health conditions).

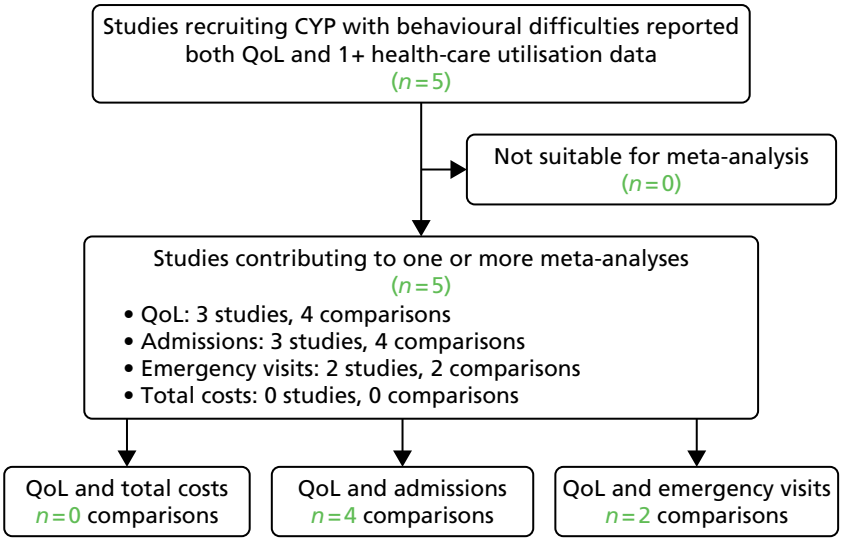


FIGURE 19 Analyses of studies for patients with behavioural difficulties. CYP, children and young people.

TABLE 6 Results of meta-analysis (behavioural difficulties)

Outcome	ES	95% CI	I^2 statistic (%)	Number of comparisons
QoL	–0.53	–0.86 to –0.20	71	4
Hospital admissions	0.30	–0.14 to 0.75	3	5
Emergency visits	0.49	–0.73 to 1.72	55	2
Total costs	–	–	–	0

TABLE 7 Summary of meta-analyses presented by LTC type

Outcome	LTC type			
	Asthma	Other physical health	Mental health	Behavioural disorders
QoL				
Pooled ES	–0.15	0.00	–0.17	–0.53
95% CI	–0.22 to –0.08	–0.18 to 0.19	–0.29 to –0.05	–0.86 to –0.20
n	48	5	20	4
I^2 statistic (%)	45	0	33	71
Hospital admissions				
Pooled ES	–0.06	–0.11	–0.02	0.30
95% CI	–0.15 to 0.02	–0.61 to 0.30	–0.17 to 0.14	–0.14 to 0.75
n	44	1	15	5
I^2 statistic (%)	38	–	30	3
Emergency visits				
Pooled ES	–0.12	–0.03	–0.15	0.49
95% CI	–0.18 to –0.06	–1.43 to 1.37	–0.39 to 0.09	–0.3 to 1.72
n	43	2	10	2
I^2 statistic (%)	22	82	64	55
Total costs				
Pooled ES	0.25	–	–0.19	–
95% CI	–0.85 to 1.35	–	–0.61 to 0.23	–
n	2	–	8	–
I^2 statistic (%)	92	–	93	–

Analysis by age

Subgroup analyses were carried out on the basis of children and young people's age. Studies were categorised according to whether the self-care intervention targeted children (aged 0–12 years), adolescents (aged 13–18 years) or both (*Table 8*). Across all three age groups, self-care support had statistically significant but minimal effects (ES of < 0.2) on QoL. Self-care support was associated with a statistically significant but minimal reduction in ED use for children. Irrespective of the target age group, self-care support had no statistically significant effects on hospital admissions or total costs. Variation in the magnitude of ESs observed across the three subgroups will in part reflect differences in the number of studies available and the precision of the pooled estimates.

Analyses of different types of self-care support

When different intensities of self-care support were compared, intensive facilitation conferred limited benefit over and above other forms of self-care support (*Table 9*).

Intensively facilitated or case-managed self-care support interventions produced statistically significant but minimal benefits in QoL (ES –0.16, 95% CI –0.23 to –0.08), with moderate variation across trials. Intensively facilitated or case-managed self-care support interventions were associated with statistically

TABLE 8 Results of meta-analysis (subgroup analysis on age, all eligible studies)

Outcome	Age group		
	Children	Adolescents	Mixed
QoL			
Pooled ES	–0.19	–0.17	–0.13
95% CI	–0.30 to –0.08	–0.28 to –0.07	–0.23 to –0.04
n	23	23	31
I^2 statistic (%)	66	40	27
Hospital admissions			
Pooled ES	–0.06	–0.08	–0.04
95% CI	–0.14 to 0.03	–0.22 to 0.06	–0.19 to 0.10
n	21	18	26
I^2 statistic (%)	0	42	49
Emergency visits			
Pooled ES	–0.10	–0.14	–0.11
95% CI	–0.17 to –0.04	–0.31 to 0.03	–0.25 to 0.04
n	22	14	21
I^2 statistic (%)	9	55	47
Total costs			
Pooled ES	–0.29	–0.19	0.84
95% CI	–0.56 to –0.02	–0.61 to 0.23	0.29 to 1.38
n	1	8	1
I^2 statistic (%)	–	93	–

TABLE 9 Subgroup analyses for study outcomes

Subgroup	Outcome			
	QoL	Hospital admission	Emergency visits	Total costs
Intervention intensity				
Pure/facilitated				
Pooled ES	**–0.20**	–0.08	–0.12	0.84
95% CI	–0.29 to –0.10	–0.24 to 0.09	–0.29 to 0.05	0.29 to 1.38
Number of comparisons	22	17	16	1
I^2 statistic (%)	25	38	44	–
Intensive/case managed				
Pooled ES	**–0.16**	–0.04	**–0.10**	–0.20
95% CI	–0.23 to –0.08	–0.12 to 0.04	**–0.17 to –0.03**	–0.57 to 0.16
Number of comparisons	55	48	**41**	9
I^2 statistic (%)	56	25	**37**	92

continued

TABLE 9 Subgroup analyses for study outcomes (*continued*)

Subgroup	Outcome			
	QoL	Hospital admission	Emergency visits	Total costs
Intervention target				
CYP				
Pooled ES	**–0.09**	–0.00	–0.12	–0.11
95% CI	–0.20 to –0.02	–0.18 to 0.17	–0.28 to 0.04	–0.61 to 0.38
Number of comparisons	23	12	12	7
I^2 statistic (%)	37	49	51	95
Parents				
Pooled ES	–0.20	–0.05	0.02	–
95% CI	–0.57 to 0.17	–0.22 to 0.12	–0.15 to 0.19	–
Number of comparisons	5	6	5	–
I^2 statistic (%)	48	0	38	–
Mixed				
Pooled ES	**–0.20**	–0.06	**–0.12**	0.02
95% CI	–0.27 to –0.13	–0.15 to –0.15	**–0.20 to –0.04**	–0.17 to 0.22
Number of comparisons	49	47	**40**	3
I^2 statistic (%)	37	36	**37**	5
Intervention format				
Individual				
Pooled ES	**–0.16**	–0.02	**–0.09**	–0.10
95% CI	–0.22 to –0.09	–0.10 to 0.06	**–0.18 to 0.00**	–0.59 to 0.39
Number of comparisons	54	55	**40**	8
I^2 statistic (%)	29	34	**37**	94
Group				
Pooled ES	–0.11	**–0.15**	–0.12	–0.11
95% CI	–0.29 to 0.07	**–0.28 to –0.02**	–0.27 to 0.02	–0.44 to 0.23
Number of comparisons	12	**8**	10	2
I^2 statistic (%)	75	**0**	54	75
Mixed/unclear				
Pooled ES	**–0.25**	–0.70	**–0.13**	–
95% CI	–0.42 to –0.09	–1.77 to 0.37	**–0.25 to 0.00**	–
Number of comparisons	11	2	**7**	–
I^2 statistic (%)	64	44	**13**	–
Intervention delivery				
Face to face				
Pooled ES	**–0.17**	–0.04	**–0.11**	–0.20
95% CI	–0.24 to –0.11	–0.13 to 0.05	**–0.17 to –0.04**	–0.57 to 0.16
Number of comparisons	62	48	**46**	9
I^2 statistic (%)	51	40	**32**	92

TABLE 9 Subgroup analyses for study outcomes (*continued*)

Subgroup	Outcome			
	QoL	Hospital admission	Emergency visits	Total costs
Remote				
Pooled ES	**–0.20**	0.01	–0.13	0.84
95% CI	–0.38 to –0.03	–0.16 to 0.17	–0.33 to 0.07	0.29 to 1.38
Number of comparisons	10	8	8	1
I^2 statistic (%)	41	21	46	–
Mixed				
Pooled ES	–0.04	–0.16	0.11	–
95% CI	–0.28 to 0.20	–0.29 to –0.03	–0.84 to 1.07	–
Number of comparisons	5	9	–	–
I^2 statistic (%)	30%	0%	82%	–
Intervention setting				
Inpatient				
Pooled ES	–0.04	–0.09	**–0.32**	–0.11
95% CI	–0.25 to 0.17	–0.61 to 0.43	**–0.60 to –0.03**	–0.62 to 0.40
Number of comparisons	5	5	**5**	1
I^2 statistic (%)	0	66	**32**	–
Outpatient/clinic				
Pooled ES	**–0.15**	–0.08	**–0.14**	–0.20
95% CI	–0.23 to –0.08	–0.19 to 0.03	**–0.26 to –0.02**	–0.66 to 0.27
Number of comparisons	33	24	**20**	7
I^2 statistic (%)	28	37	**55**	94
School/community				
Pooled ES	**–0.19**	–0.09	**–0.17**	–0.29
95% CI	–0.36 to –0.03	–0.31 to 0.13	**–0.26 to –0.08**	–0.56 to –0.02
Number of comparisons	12	8	**12**	1
I^2 statistic (%)	72	39	**3**	–
Home				
Pooled ES	**–0.13**	0.02	–0.02	0.84
95% CI	–0.25 to –0.01	–0.10 to 0.13	–0.13 to 0.09	0.29 to 1.38
Number of comparisons	20	21	16	1
I^2 statistic (%)	40	25	16	–
Mixed setting				
Pooled ES	–0.29	0.08	0.02	–
95% CI	–0.60 to 0.20	–0.19 to 0.35	–0.27 to 0.31	–
Number of comparisons	7	7	4	–
I^2 statistic (%)	72	7	38	

CYP, children and young people.
Note
Significant pooled effects from two or more comparisons are in bold.

significant but minimal reductions in ED use (ES –0.10, 95% CI –0.17 to –0.03), but no statistically significant reductions in hospital admissions (ES –0.04, 95% CI –0.12 to 0.04) or total costs (ES –0.20, 95% CI –0.57 to 0.16). The lack of data for total costs prohibits meaningful interpretation of this outcome.

Less intensive self-care interventions (i.e. facilitated or pure self-care support) showed small and significant improvements in QoL (ES –0.20, 95% CI –0.29 to –0.10), with low variation across trials. Facilitated or pure self-care support did not significantly reduce ED visits (ES –0.12, 95% CI –0.29 to 0.05) or hospital admissions (ES –0.08, 95% CI –0.24 to 0.09). The lack of data for total costs prohibited a meaningful analysis of this outcome.

Subgroup analyses additionally explored the effects of different intervention targets, formats, delivery modes and settings. ESs and 95% CIs for each of these subgroup analyses are shown in *Table 8*; results are highlighted where effects were statistically significant. In interpreting this table it is important to remember that any variation in the ESs observed for different subgroups will, in part, reflect differences in the number of studies available and the precision of the pooled estimates.

The existing evidence suggests that the effect of self-care support on children and young people's QoL may be optimised by interventions that include the child or young person and deliver at least some of their content to an individual or individual family. Nonetheless, effects are likely to remain small. Minimal but statistically significant effects (ES of < 0.20) were observed across delivery modes (face to face and remote) and settings (outpatient, community and home).

With regard to hospital admissions, few positive effects were observed. Statistically significant but minimal benefits occurred with group-based interventions and mixed delivery models (i.e. those using a blend of face-to-face and remote facilitation). Both of these findings were based on limited data and must therefore be treated with caution.

Internal validity

Table 10 shows the effects of self-care support on the four core outcomes, for the whole sample and the subset of studies rated as being at low risk of bias on the basis of adequate allocation concealment. Studies rated as being at low risk of bias reported minimal benefits of self-care support on QoL and ED visits and no significant effects on hospital admissions or costs. The effects observed for the subset of studies rated as being at low risk of bias were analogous to the full data set, suggesting that our main analyses were robust.

Small-study bias

The funnel plots for QoL and health utilisation outcomes are presented in *Figures 20–23*. A funnel plot is based on the premise that precision in the estimation of an ES will increase as sample size increases. Bias is suggested by the emergence of a non-symmetrical plot.

Potential for publication bias in QoL outcomes was observed (Egger's bias 0.79, 95% CI 0.08 to 1.51; $p = 0.03$). This result is most likely influenced by a single study on the bottom left-hand side of the funnel plot. No evidence of publication bias was observed for hospital admissions (Egger's bias 0.16, 95% CI –0.82 to 1.14; $p = 0.74$), emergency visits (Egger's bias –0.19, 95% CI –1.00 to 0.62; $p = 0.64$) or total costs (Egger's bias –3.40, 95% CI –15.25 to 8.46; $p = 0.53$), although the low power of this final test means that publication bias cannot definitely be ruled out.

TABLE 10 Results of meta-analysis by evidence quality

Outcome	All studies	Low risk of bias
QoL		
Pooled ES	–0.17	–0.15
95% CI	–0.23 to –0.11	–0.25 to –0.06
Number of comparisons	77	34
I^2 statistic (%)	48	59
Hospital admissions		
Pooled ES	–0.05	–0.06
95% CI	–0.12 to 0.03	–0.16 to 0.04
Number of comparisons	65	31
I^2 statistic (%)	35	28
Emergency visits		
Pooled ES	–0.11	–0.12
95% CI	–0.17 to –0.04	–0.21 to –0.02
Number of comparisons	57	27
I^2 statistic (%)	38	36
Total costs		
Pooled ES	–0.11	0.02
95% CI	–0.47 to 0.25	–0.22 to 0.26
Number of comparisons	10	6
I^2 statistic (%)	92	64

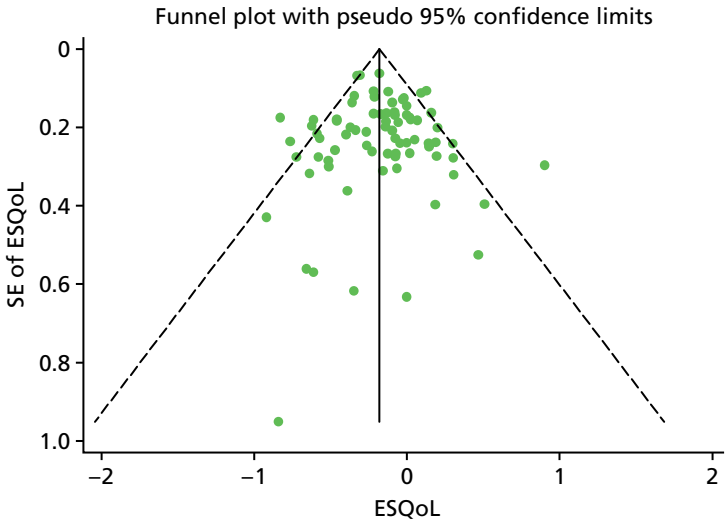


FIGURE 20 Funnel plot: QoL. ESQoL, effect size QoL; SE, standard error.

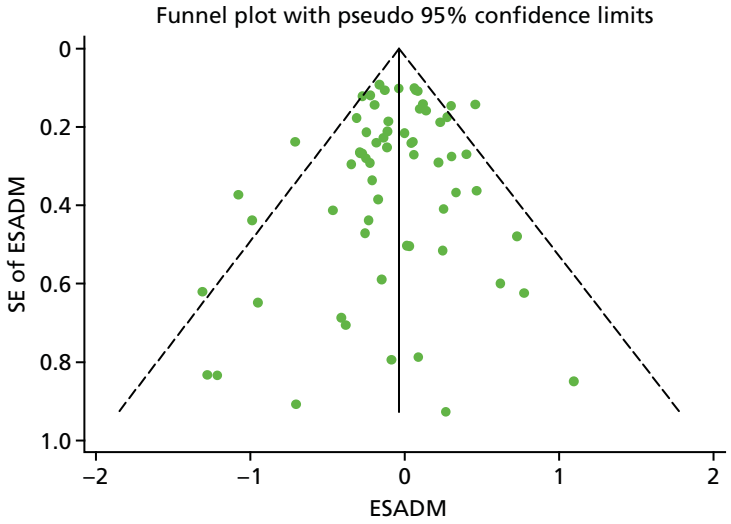


FIGURE 21 Funnel plot: hospital admissions. ESADM, effect size hospital admissions.

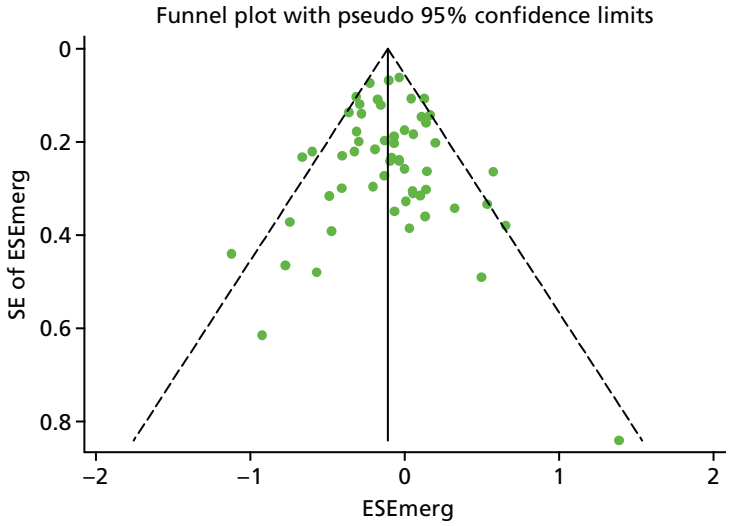


FIGURE 22 Funnel plot: emergency visits. ESEmerg, effect size emergency visits.

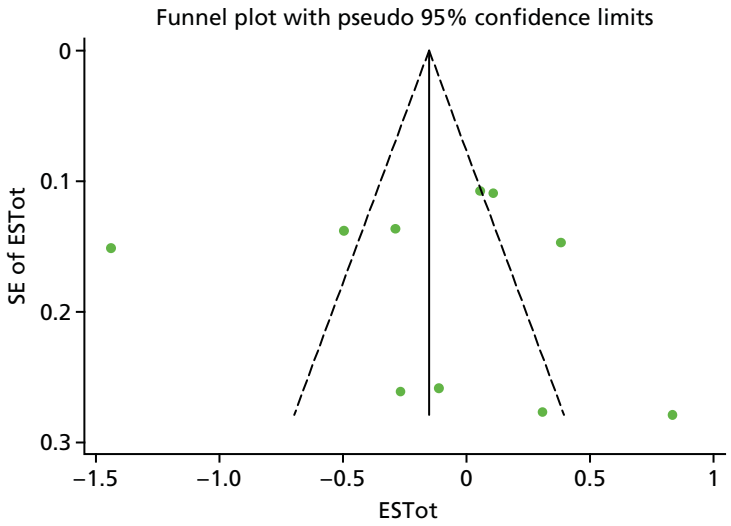


FIGURE 23 Funnel plot: total costs. ESTot, effect size total costs.

Evidence context

The degree to which the results of a trial conducted in a particular setting can be generalised to a different setting (i.e. the external validity), is always an issue in the interpretation of findings of systematic reviews. The impact of variation in context may be greater when considering complex service-related interventions, which are designed to have an impact on individual behaviour, or when the focus is on utilisation outcomes, which may themselves reflect important differences in the context in which the study is run.

To explore this issue, we calculated overall ESs for QoL, hospitalisation, ED visits and total costs by country, to assess whether or not the effect of self-care interventions on these outcomes varied markedly between UK and non-UK settings. The results are shown in *Table 11*; analyses appear robust. The effects of self-care support on QoL are non-significant in the UK context, a difference that most likely reflects the smaller number of studies available and differences in precision of the pooled effects.

When analyses were limited to UK studies, self-care support continued to be associated with statistically significant reductions in ED visits; this result did not hold for studies conducted outside the UK. Direct comparison of the two is limited in the sense that many other factors may also differ between studies that are assigned to different groups on the basis of research origin.

TABLE 11 Results of meta-analysis by study origin (UK vs. non-UK)

		Study origin	
Outcome	All studies	UK	Non-UK
QoL			
Pooled ES	–0.17	–0.13	–0.18
95% CI	–0.23 to –0.11	–0.31 to 0.04	–0.24 to –0.11
Number of comparisons	77	13	64
I^2 statistic (%)	48	53	47
Hospital admissions			
Pooled ES	–0.05	0.01	–0.06
95% CI	–0.12 to 0.03	–0.20 to 0.21	–0.13 to 0.02
Number of comparisons	65	10	55
I^2 statistic (%)	35	53	30
Emergency visits			
Pooled ES	–0.11	–0.15	0.13
95% CI	–0.17 to –0.04	–0.21 to –0.08	–0.05 to 0.30
Number of comparisons	57	10	47
I^2 statistic (%)	38	25	30
Total costs			
Pooled ES	–0.11	–0.11	–0.28
95% CI	–0.47 to 0.25	–0.11 to 0.33	–0.89 to 0.33
Number of comparisons	10	5	5
I^2 statistic (%)	92	43	96

Intervention implementation

The external validity of research studies can improve the sustainable adoption and implementation of effective, generalisable, evidence-based interventions. The RE-AIM framework[65] identities five pieces of information that are necessary to translate research into action. These are:

1. reach
2. effectiveness
3. adoption
4. implementation
5. maintenance.

Reach

The reach of health behaviour interventions refers to the absolute number, proportion and representativeness of individuals who receive it. Generally, data on such issues are poorly reported in trials and often the data that are reported are not comparable between studies. We extracted data from trials on the proportion of eligible patients who did not take part, these data are presented in *Appendix 10*. Participation rates were unclear or not reported in 27 studies (28% of the data set). The average participation rate across the remaining studies was 70%, with a range of 13–100%. Interpretation of these data are difficult because of the variation and ambiguity in the exact recruitment procedures employed by each study involved for effective comparison. Sample representativeness was not reported in 39 studies; 50 studies reported study exclusion criteria, including acute and comorbid long-term health conditions.

Effectiveness

Effectiveness is defined as the impact of an intervention on important outcomes, including potential negative effects, QoL and economic outcomes. In this review, the effects of self-care are presented in forest and permutation plots, including any potential detrimental effects on QoL. The validity of the conclusions drawn at each stage remains dependent on the size of the evidence base and its scientific rigour. Limitations in the primary evidence base are considered, where appropriate, and a sensitivity analysis based on evidence quality has been carried out. Limitations in review procedures are discussed in the following chapter (see *Chapter 4*).

Adoption

The adoption of health behaviour interventions is dependent on the absolute number, proportion and representativeness of the settings and facilitators delivering a programme. Data relating to the proportion and representativeness of the settings used in the primary research studies were rarely reported. We have used subgroup analyses to compare the effects of self-care support delivered in different intervention settings. We extracted detailed information on intervention setting, size and facilitator expertise and present these data in *Appendix 10*. In our review, the vast majority of interventions ($n = 95$, 83%) were delivered by qualified health professionals or paraprofessionals (i.e. workers with formal tertiary education or training). Only four interventions were delivered by lay health workers (receiving only informal job-related training). One additional study included a lay health worker as part of a multidisciplinary team.

Implementation

Implementation refers to a study's fidelity to an intervention protocol. This includes consistency of intervention delivery and the time and costs required to deliver the intervention as intended of the intervention. Twenty-four studies (25%) did not report any process measures. The majority of the remaining studies reported basic data on patient engagement. Lack of data pertaining to facilitator engagement and intervention fidelity means it is difficult to know the extent to which interventions were delivered as intended.

Maintenance

Maintenance in the RE-AIM framework refers to the long-term effects of an intervention on individual patient or organisational outcomes ≥ 6 months after intervention completion. Where multiple data points were reported in the primary studies, we selected outcomes closest to a 12-month follow-up. The mean (SD) follow-up duration for the data extracted for our review was 10.4 (SD 4.6) months.

Chapter 4 Discussion and conclusions

The review reported here aimed to take account of health-care utilisation and costs in conjunction with health outcomes to provide evidence-based guidance on the provision of cost-effective self-care support for children and young people with long-term physical and mental health conditions.

We identified evidence across a range of physical and mental health LTCs, although the vast majority of our included studies evaluated self-care support for asthma. Evidence was available for a range of self-care interventions, differing in nature, primary target (i.e. child or young person, parent or family) and the total amount of support provided. More often self-care support was 'intensively facilitated,' meaning that it exceeded four sessions or 2 hours in total. Most frequently, self-care support was delivered face to face by qualified HCPs who worked with individual patients or families at home or in outpatient settings.

A moderately sized evidence base enabled meaningful assessments of the impact of self-care support on children and young people's QoL and hospital admissions. A total of 77 and 65 studies contributed data to meta-analyses of these outcomes, respectively. A comparable-sized evidence base (57 comparisons) permitted exploratory analyses of the effects of self-care support on emergency visits; this outcome was prioritised by patients in our PPI consultation. Comparatively fewer data demonstrated the effects of self-care support on total health service costs. Alternative forms of health-care use (e.g. primary care visits) were inconsistently reported and not amenable to meta-analysis.

The available evidence base was of moderate quality; almost half of all studies reported adequate methods to randomly allocate participants to treatment or control conditions and reported adequate allocation concealment. The mean baseline samples size was 215 (SD 209) participants.

In line with our protocol, we legitimately excluded studies that failed to report both clinical and economic outcomes. In this reduced data set, self-care support was associated with statistically significant, minimal benefits for QoL, but lacked clear benefit for hospital admissions and costs. This finding endured across different levels of evidence quality, intervention intensities and LTCs. Statistically significant but minimal reductions in ED use were observed.

Subgroup analyses revealed statistically significant, minimal reductions in ED use for children aged < 13 years, children and young people with asthma and children and young people receiving > 2 hours per four sessions of self-care support. Preliminary evidence suggests that interventions that include the child or young person, and deliver at least some content individually, may optimise QoL effects. Face-to-face delivery may be necessary to maximise impact on ED use. Limitations in the primary data demand that these results are treated with caution.

Review strengths and limitations

Our study was conducted and reported in line with current systematic review guidance.[62,63] Conceptual blurring within the literature means that self-care support is inconsistently defined. We deliberately used broad search criteria to maximise the likelihood that all relevant evidence was identified.

1. Designing effective search strategies for broadly defined concepts can be challenging and success invariably relies on the presence (or absence) of specific terms in the titles or abstracts of the papers that are identified. Although the risk is small, it is possible that some studies that met our definition of self-care support did not use any of our selected search terms and were thus not identified and included in our review. It is difficult to assess the bias that this may have generated. Self-care support is arguably more clearly defined in the physical health literature, where self-care typically focuses on education and illness management, than it is in the mental health literature, where support to develop

problem-solving skills or address emotional challenges may also be framed as psychological therapy (e.g. guided self-help, parenting programmes or cognitive–behavioural therapy). Iterative and rigorous search development, tested against a set of known studies, enabled a comprehensive list of search terms to be compiled. Reference checking and forward citation searching provided further reassurance that relevant evidence had not been missed.

The broad scope of our search criteria, together with a relatively rapid time scale for our review, inevitably necessitated some methodological compromises. A higher number of studies than we expected was eligible for our review, which impacted on our assessment of evidence quality. We categorised our studies according to a recognised hierarchy of study designs and used a single parameter, allocation concealment, as a reliable indicator of trial quality. The Cochrane Collaboration advocates assessing risk of bias across multiple domains, but does not recommend that these assessments are summed to derive a single indicator of study quality. Sensitivity analyses necessitated grouping studies on the basis of one measure of study quality and allocation concealment is the aspect of trial quality most consistently associated with treatment effect.[68] We report other aspects of evidence quality, such as study design, in our detailed study tables (see *Appendix 5*).

Intervention descriptors, such as quality assessment, were largely dependent on the quantity and clarity of the information reported in the primary research papers. No definitive framework of self-care support interventions for children and young people exists. We thus adopted a generic definition of self-care support for screening purposes and worked with our project advisory panels to refine a post hoc typology of self-care support interventions. We used two independent researchers for all study eligibility decisions, including preliminary title and abstract screening. Intervention characteristics, categorisation and effects (i.e. outcome data) were also independently extracted. Any unidentified errors would be more likely to introduce imprecision than bias.

We adopted broad inclusion criteria for intervention eligibility and also adopted a broad approach to meta-analysis, using wide inclusion criteria to categorise intervention and patient groups. We combined data across different types and intensities of self-care support interventions and across different types of long-term mental health conditions. Consensus on how best to deal with clinically heterogeneous evidence is lacking.[62] We acknowledge that pooling more homogeneous groups of studies may have advantages. Where the size of an evidence base is sufficient to enable meaningful division, such analyses can usefully inform service design and decision-making. However, excessive splitting between intervention types and patient groups reduces precision, risks multiple testing problems and may overemphasise minor differences between study groupings.[201] It is also highly dependent on valid and reliable classifications of patients and interventions, which can be difficult both in principle (when consensus over such classification is lacking) and in practice (when reporting is suboptimal). We adopted a strategy that took a broad approach as the primary analysis, but we conducted subgroup analyses to identify possible intervention characteristics that may have influenced treatment effect.

Our approach sought to identify the maximum amount of quantitative evidence available relative to the aims of our brief and to balance this with meaningful analysis. Our emphasis was on children and young people's own subjective assessments of QoL. Where these were not available, we used parent-reported QoL measures, or patient- or parent-reported symptom measures, as proxy indicators of children and young people's QoL. HRQoL typically prioritises those domains of health and well-being that fall under the influence of health-care systems, policy-makers and providers,[202] and is a particularly valuable tool in the assessment of behavioural and psychological interventions. However, the inherent subjectivity of QoL belies some unique challenges to its measurement. Limited evidence suggests that parental reports may be more accurate than those of health professionals,[203] but empirical investigations of the level of agreement between parent and child appraisals yields mixed results.[204] Difficulties arise in establishing the levels of agreement between two parents,[205,206] the potential for bias within parental ratings and the potential differences in the life priorities of parents and children.[207] We pooled health status and QoL measures, and did not explore differences in the effects of self-care support observed with different outcome measures or raters.

Our emphasis on meta-analytic models meant that a minority of studies with incomplete but potentially relevant data had to be excluded. Alternative models of synthesis could have used a more narrative approach, although the ability of this method to draw valid conclusions about the relationships between our outcome variables is questionable. We tabulated study findings, as reported by the study authors, in those instances where data were unsuitable for meta-analysis.

The requirement that data were reported in a way that was amenable to meta-analysis for two outcomes could potentially have caused selection effects. Studies that were not eligible for meta-analysis were, in broad terms, older and smaller in size. It is unclear how exclusion of these trials may have influenced the pooled-effects, as many provided little or no narrative of their findings. We were unable to formally test the differences in the outcomes of the two studies because, by definition, we were unable to calculate standardised ESs for studies that were not suitable for meta-analysis.

Our analyses of small-study bias across the studies did not find any evidence of bias in relation to health-care utilisation, but there was evidence of possible bias in the QoL data. Selective publication of positive studies is one potential reason for asymmetry in the funnel plot. If present, this bias would mean that smaller studies in the review had overestimated intervention effects. We conducted targeted author searches for additional publications and/or unpublished data identified in conference abstracts, but did not extend our searches to grey literature or ongoing trial registries.

Our focus on quantitative evidence meant that we gained insights into intervention effect. We categorised our ESs according to magnitude, using a commonly accepted, yet somewhat arbitrary, classification system. From a patient's perspective, 'small' or 'minimal' effects may have greater or lesser meaning depending on the outcome to which they are attributed. ED visits were identified by our PPI panel as a particularly important aspect of health service utilisation for children, young people and their parents, and it is conceivable that very small reductions in ED use may be important and potentially more meaningful than equivalent effects on QoL. We did not conduct a mixed-methods or qualitative review, which may offer additional insights into the acceptability of self-care support to children, young people and their families, their preferred content and delivery formats and the meaning that they attribute to these very different outcomes.

Implications of the study for policy and practice

Self-care support interventions have small but statistically significant effects on children and young people's quality of life

This review is the first to simultaneously examine the effect of self-care support for LTCs on patient outcomes and health service utilisation in children and young people. Pooled ESs suggest that self-care support has a positive but minimal effect on QoL (ES of 0.17). Evidence is most robust for children and young people with asthma (ES of 0.15) and long-term mental health conditions (ES of 0.17). Lack of evidence for other conditions (or condition clusters) prohibits meaningful assessments of effect.

A pooled effect of 0.17 aligns well with the results of our preceding review, which used identical methods to establish the effects of self-care support for LTCs in adults.[26] In adult populations, self-care support is associated with small but statistically significant effects on QoL (ES of 0.22).[26]

Direct comparison of our findings with other reviews of self-care support for children and young people is limited by fundamental differences in remits and scope. A prior review of the clinical effectiveness of self-care support interventions for children and young people with physical health conditions[31] reported positive impacts on QoL, but synthesised data narratively and did not present standardised ESs derived from a meta-analysis of intervention effects. The effect of self-care support on the health status of children and young people with mental health conditions has been studied separately; in this instance pooled ESs of 0.20 and 0.12 were reported at 6 and 12 months, respectively.[32]

The size and the scope of the evidence base differ between different reviews. These differences are not unusual and reflect both practical and methodological variances. Earlier reviews[31,32] adopted different search dates and applied different eligibility criteria, stemming from their need to address different research aims. In line with our protocol, we legitimately excluded studies that failed to report both clinical and economic outcomes. This was because our review was designed to identify those models of self-care support that could reduce health services utilisation and costs, without compromising outcomes for children and young people. Only studies reporting both forms of data could answer this brief. A number of trials of self-care support have reported children and young people's subjective QoL assessments, but have not simultaneously quantified the impact of these interventions on health service costs. We acknowledge that some evidence with broader relevance to our population may have been excluded by these studies failing to meet our inclusion criteria.

Our up-to-date and comprehensive review makes an important and meaningful contribution to service development and commissioning debates. When QoL was plotted against health service utilisation data, relatively fewer studies reported reductions in both outcomes. This suggests that any intention to use self-care support to reduce utilisation should therefore not raise concerns that these interventions routinely compromise patients' QoL.

In drawing this conclusion, it is important to remember that study effects are conventionally reported at the level of the group. The available data apply only to those participants consenting to take part in the included research studies. Where reported, study participation rates appeared typical of behavioural intervention trials, but explorations of sample representativeness were limited by inconsistent data and ambiguous reporting. Our review focused solely on children and young people's QoL and did not consider the impact of self-care support on parental or family outcomes. Thus, it may be prudent for health professionals to monitor the individual impact of self-care support, including any potential effects on these broader contexts, during routine consultations with their patients.

Self-care support interventions lack clear benefits for health service utilisation and cost

Having established that self-care support does not routinely compromise children and young people's QoL, it becomes necessary to consider its effect on health-care utilisation and costs. On the basis of the current evidence, we cannot reliably conclude that self-care support significantly reduces overall health-care costs.

Analysis of the impact of self-care support on total costs (our primary analysis) was limited by a lack of available data. Pooled ESs suggest a minimal effect (ES of –0.11) on ED visits and a non-significant effect on hospital admissions (ES of –0.06). Lack of a statistically significant effect on hospital admissions endured across different intervention intensities, evidence quality levels and LTCs.

Small reductions in the number of ED visits may well confer multiple advantages on children, young people and their families, not least because accessing emergency care can be associated with acute emotional and logistical stressors. However, at a population level, uncertainty remains regarding the extent to which minimal reductions in emergency use can offset the costs of delivering self-care support and ameliorate the fiscal burdens facing contemporary health-care systems. Our exploratory subgroup analyses suggest that effects may be more pronounced in UK than in non-UK settings and that more intensively facilitated self-care support interventions may be necessary to secure minimal benefits for ED use. In the absence of meta-regression, these subgroup analyses are limited by the fact that many other factors may also differ between study groups.

Any analysis focused on a single aspect of health-care utilisation is vulnerable to error. Single aspects of health-care utilisation represent 'partial' cost data, which, by definition, neglect costs and cost changes elsewhere in the system. Arguably, cost shifting may have been a greater risk had substantial reductions in health service utilisation been revealed. In this instance, it would have become crucial to ascertain whether the observed effects reflected genuine reductions in health service use or whether costs had simply been transferred to other health-care sectors or on to patients. With the exception of ED visits and hospital admissions, health service utilisation data were inconsistently reported by the primary studies in our review.

This lack of transparent and standardised reporting means that we cannot be certain that other cost changes were not encountered.

Total cost outcome data are necessary to provide policy-makers and service providers with clear evidence of the efficiency (or otherwise) of self-care support. By definition, these data sum costs across all service sectors and include the costs of delivering the intervention that is intended to generate these cost changes. Few primary studies reported total cost data in the current review, prohibiting this more robust analysis.

Health utilisation outcomes rarely distinguish between 'necessary' and 'avoidable' service use.[26] Such distinctions are not common in the self-care support literature, partly because the difference is conceptually and logistically difficult to assess.[208] An implicit assumption underlying self-care support is that it reduces 'avoidable' health service contacts, either by improving a person's overall health and/or by precipitating more effective crisis responses. Some of the studies in our review distinguished between scheduled and non-scheduled health service use, but did not report care appropriateness per se. We did not distinguish between elective and unplanned admissions in our analysis, nor did we distinguish between legitimate and inappropriate ED use. The effects of self-care support interventions on these different forms of health service utilisation may conceivably be very different.

The optimal assessment of the hypothesis underlying this review would have been to restrict our analysis to the most comprehensive assessment of costs, including those related to NHS service use, social care and other services (e.g. the cost of additional or alternative education for children and young people living with LTCs). Multiple family expenses may be incurred when a child or young person lives with a LTC and arguably the impact of self-care support on families' out-of-pocket expenses and productivity need to be examined. There are inherent challenges in evaluating the economic effects of self-care support from this broader 'societal perspective'.

From an operational perspective, it is difficult to foresee how self-care support interventions justified from a societal perspective will be implemented.[209] This is because the budgets for different service sectors are fixed and/or the financial transfers which would be needed between them are not always possible. Although any necessary reallocation of resources can be identified, transfers between sectors are not always considered desirable or feasible.[210] From an evaluative perspective, comprehensive costing of self-care support interventions is rare and generally restricted to formal economic analyses. Our review included 97 studies, of which only 35 reported formal economic analyses. The broader evidence base included in our review is reflective of a larger number of studies that report useful data on health service utilisation. Systematic assessment of this wider literature makes an important and much-needed contribution to policy and service development.

A global economic crisis means that substantial effort continues to be invested in improving the efficiency of health-care systems. Yet, despite self-care being advocated as a key method of increasing service efficiency, there remains uncertainty regarding the scale of the contribution that can be made. Although a previous review has suggested that self-care support interventions may reduce hospital use and total costs in adults, our study has demonstrated potentially smaller effects in children and young people. Understanding the reason for these differences may be an important focus for future research efforts.

Insufficient evidence of an effect of self-care support on children and young people's health service utilisation raises important questions regarding the primary drivers for its use. Self-care support resonates with multiple policy strategies, including philosophical shifts towards partnership working and the delivery of personalised care.[33] In children and young people, self-care support may offer an early and otherwise unavailable opportunity to negotiate LTC management, maximise adult health outcomes and make a potentially longer-term, sustained contribution to service utilisation.[31,39] Consideration must thus be given to both its processes and outcomes, and the potential breadth of benefits that it will confer. Specific attention should be given to different stakeholder perspectives and whose views – population, policy, professional or patient – are the most important when minimal effects on QoL and health service utilisation are observed.

The impact of self-care support interventions may depend less on intervention intensity and more on its delivery mechanisms

Rigorous evaluation of the efficiency of self-care support interventions for children and young people with LTCs demands concurrent evaluation of patient well-being and health utilisation effects. The suggestion that self-care support may minimally benefit QoL, but not translate into marked benefits for health service use held, across different age groups, intervention intensities and settings. Constraints on the number of data underpinning these results demand some caution in their interpretation.

In line with our protocol and previous review,[26] we categorised intervention intensity according to a broad typology and compared pure or facilitated self-care support with more intensively facilitated or case-managed care. The threshold for intensive facilitation took account of both amount of self-care support (> 2 hours or four sessions), as well as the nature of the support provided. This threshold was an arbitrary empirical threshold that provided a reasonable distribution of studies among the different categories.

Reductions in ED use were not consistent across LTCs or intervention type. Preliminary analyses suggest a significant reduction in emergency use for children aged < 13 years, children and young people with asthma and children and young people receiving more intensively facilitated self-care support interventions. However, the existing evidence base is of only moderate size and these different findings will, in part, reflect differences in the number of studies available and the precision of the pooled effects.

Pooled effects suggest a significant benefit for self-care support interventions for asthma that is not confirmed in mental health. Self-care support interventions for children and young people can vary considerably in the extent to which they target different service utilisation behaviours and this potential influence may be meaningful. It is plausible, for example, that, although written action plans to control asthma exacerbations may play a direct role in avoiding ED visits, self-care support for mental health may be more focused on longer-term recovery and patient empowerment. Notably, however, the potential burden of these different intervention models may also differ. Preliminary data in our permutation plots suggest that, although self-care support interventions can reduce utilisation for children and young people with asthma, compromises in their QoL cannot definitively be ruled out. Compromises in QoL were less evident for mental health conditions, although meaningful interpretation is currently limited by a lack of available data.

Our review did not explore differences in the effects of interventions with different content; this information was inconsistently reported by the primary studies in our review. Service developers might usefully explore the process and content of those interventions that did and did not compromise outcomes in the current review to assess the implications of this for future service design. Direct consideration of the aim and purpose of different self-care support interventions, including the rationale for delivering higher-intensity self-care support, may benefit service delivery.

Optimal assessment of the effects of more and less intensive self-care support demands a head-to-head comparison. Only six trials in our review adopted this design.[79,98,99,111,178,191] Meta-regression is possible, but has limited utility in moderate-to-small data sets as a result of a lack of available power. The variability that we observed in intervention descriptions also challenges its use. Lack of standardisation in the terminology and level of detail used to describe self-care support interventions meant that meta-regression had limited function in the context of the current evidence base.

The available evidence suggests that the effect of self-care support on children and young people's QoL may be optimised by interventions that include the child or young person and deliver at least some of their content to an individual or individual family. Preliminary analyses suggest that face-to-face delivery may be necessary to secure minimal benefits for ED use but, at present, the evidence base does not discriminate between outpatient clinic or community settings. Further research is needed to confirm which approach works best, in what context and for what condition. Without evidence to suggest that health service utilisation is differentially impacted by different delivery models, decisions regarding where or how to deliver self-care may usefully be determined by patient and practitioner preferences and available service resources.

Differences in the magnitude and pattern of effects that were observed across children and young people's QoL and hospital admissions are subject to multiple interpretations. One explanation is that the magnitude or nature of the improvement in QoL is insufficient to reduce this aspect of children and young people's utilisation. Another is that children and young people's subjective health assessments remain somewhat independent of their service use. Self-care in relation to children and young people is known to be complex and conceptually different from that of adult populations. This is, in part, attributable to the role that parents play in managing their child's condition and the potentially different psychosocial consequences of LTC management for children, their parents and families.[210] Any policy mandates that seek to change children and young people's health behaviours must consider children's autonomy in the health-care system and the broader social and family contexts in which decision-making is occurring. Those developing and designing self-care support interventions might usefully consider the extent to which reductions in utilisation are an explicit goal of the intervention, the extent to which health professionals are prepared and willing to transfer responsibility to families[211] and the extent to which parents and young people are willing to receive it.[51–53]

Our review has identified a potential area of conflict in the delivery of self-care support interventions. Although effects on QoL and ED use may be optimised by delivering interventions to individuals, group-based interventions may be more likely to result in demonstrable reductions to hospital admissions. Group-based models of self-care support have previously been reported to normalise chronic illness, reduce social isolation and develop the social networks of children, young people and their parents,[31] while also offering potential cost savings through higher staff-to-child ratios. Any notion that they may also confer benefits on health service utilisation may thus appeal to service providers. However, limitations in the current evidence base mean that this result must be treated with caution and further research is necessary to test this hypothesis prior to significant investment in service development.

Implications for research and future research funding

Our findings have clear implications for future research. NHS commissioning agendas emphasise the development of evidence-based services that can demonstrate adequate standards of care delivery, quality of care for patients and value for money. The design of new, rigorous studies of self-care support for children and young people with long-term health conditions is likely to be a vital part of the evidence-gathering process for this new commissioning agenda.

The size and scope of the evidence base should be expanded to ascertain the effects of self-care support across a wider range of long-term conditions

Our review identified a much smaller evidence base than our previous review, which used comparable methods to evaluate self-care support interventions for LTCs in adults. The smaller evidence base in this review is consistent with the recognition that the majority of self-care research has been conducted with adult populations. There has been a lack of a cumulative approach to learning from studies of self-care support with children and young people, especially in relation to the health economic and utilisation literature. Prior work has acknowledged a lack of synthesis of the effects of self-care support intervention across different long-term health conditions.[31,32]

An important observation is that the majority of self-care support interventions included in our review were designed and delivered to children and young people with asthma. This is perhaps not surprising given its prevalence in the child population. However, the incidence and/or survival rates of other conditions (e.g. diabetes and cystic fibrosis) are also increasing;[59–61] and meeting the needs and priorities of these children and young people, their families and NHS services is likely to constitute a crucial element of statutory service planning in the future. The generalisability of our findings to other long-term health conditions is not clear.

Our review identified a moderate evidence base for mental health conditions. This broad condition cluster encompassed a range of potential heterogeneous conditions, including (in relatively equal proportions)

depression or anxiety, suicidality or self-harm, psychosis or schizophrenia and eating disorders. The decision to combine data across these different conditions was a methodological one, justified on the basis that this provided a reasonable number of studies for meta-analysis and permitted a broad cumulative assessment of the effects of self-care support interventions for mental health. A finer-grained analysis of the effects of self-care support on the different patient experiences and utilisation pathways that these conditions may precipitate demands the acquisition of a much bigger evidence base.

The generation of new evidence should adopt clear and consistent standards of data reporting, including comprehensive reporting of patient outcomes, utilisation and costs

Our review adopted a comprehensive and rigorous approach to study eligibility judgements and data synthesis. Our ability to conduct some of our analyses has been hampered by poor reporting of outcome data in primary studies. Although our typology of self-care support interventions was relatively simple, its application was complicated by variation in the amount of the detail provided, including lack of transparency regarding intervention personnel and the amount and nature of the support that they provided. More comprehensive, consistent and theory-led reporting of intervention content and processes would facilitate much more effective analyses of specific intervention ingredients.

We identified a notable number of studies ($n = 19$) that met our review inclusion criteria but failed to provide data amenable to meta-analysis. Deficiencies in outcome reporting are common and are not specific to our review, although the requirement that primary studies reported both QoL and utilisation outcomes meant that the impact of these deficiencies was inevitably more acute. More consistent and comprehensive reporting of data would enable more effective syntheses.

Our primary objective was to assess the ability of self-care support to reduce costs without compromising outcomes for children and young people. This objective does not map neatly onto conventional economic analyses, which focus on incremental cost-effectiveness ratios (ICERs) and associated net mean benefit statistics. Traditionally, interventions that increase costs, but provide significant health benefits for children, might attract support from decision-makers, who would then face decisions about which other interventions (with less attractive cost-effectiveness profiles) might be replaced. The current research aimed to establish whether or not cost savings could be made without comprising patient health.

The primary analysis identified in our protocol was on total costs. We applied liberal inclusion criteria to the cost outcomes included in our forest and permutation plots, and included data where it represented a composite measure of health service costs. However, inconsistencies in data reporting meant that not all studies included all sources of health service or intervention delivery costs. As such, some outcomes may have fallen short of what would conventionally be considered a comprehensive assessment of NHS costs. No clear relationship between patient outcomes and costs was evident in the permutation plot, although only a small number of comparisons was available for meta-analysis and variability across studies was high. Lack of data availability meant that we could not accurately assess the robustness of our secondary analyses, which we based on partial costs.

Our protocol stipulated that our secondary analyses would, where data allowed, sequentially explore the effect of self-care support on inpatient, outpatient, primary care and community care resources. We also intended to assess the effect of self-care support on prescribed medication and patients' and families' out-of-pocket expenditures. Lack of consistent measurement and ambiguity in the data available meant that these analyses could not be carried out.

From the patient perspective, any positive effect of self-care support on QoL is likely to be appraised and interpreted in the context of other gains and losses, including the costs incurred in engaging in self-care behaviours. Future studies should thus seek to establish which models of self-care support, if any, are associated with reduced service utilisation and explore, through the collection of comprehensive cost data, potential patterns of cost shifting between services and patients.

Potential differences in the shorter- and longer-term effects of self-care support for children and young people should be considered

Within the limits of the data available, our review suggests that self-care support may have minimal but positive impact on children's QoL and lack clear benefits for health service utilisation. This finding is based on the short-term follow-up data reported by the primary studies in our review. Where multiple follow-up assessments were conducted, we extracted data closest to a 12-month assessment.

Self-care support for children and young people may have an early and valuable part to play in developing self-efficacy, empowering patients and promoting positive health behaviours for LTC management. Insights into the processes underlying utilisation can be derived from adult studies, which suggest that reductions in health service use may be facilitated by shifting conceptions of reliance on traditional services and translating the acquisition of skills and practices into everyday routines.[26] Prior experiences and methods of contact with services appear to need explicit attention to transition successfully to greater self-care.[212] Giving early legitimacy to personal self-care strategies and modifying perceptions of risk may thus be a key way to reduce later service utilisation. Further research may usefully establish if, and if so, which models of self-care support for children and young people have had longer-term effects on QoL and health utilisation. Modelling the long-term economic consequences of improved health outcomes may be necessary to assess these effects, given the logistical difficulties of prolonged follow-up in clinical trials. Qualitative research into the reasons underpinning sustained health service utilisation in children and young people may also afford valuable insights for future service design.

Our review has treated self-care support as a discrete form of health technology that is bounded and capable of being delivered in a standardised form. The primary studies in our review evaluated interventions that lasted for a limited amount of time (median total duration 5 hours delivered over 12 weeks). An implicit assumption driving many self-care support initiatives is that relatively short-term interventions will lead to permanent behaviour change and deliver cumulative linear benefits for health utilisation as professional support is reduced over time.[26,32] Self-care support in children and young people inevitably occurs in the context of many other transient influences, including critical influences from parents and peers.[51–53,213] Fluctuations and complexity in the transfer of responsibilities from parents to young people are routinely acknowledged in the self-care literature[50,214] and introduce a level of uncertainty into the likely durability of intervention effects.

Our review suggested similar effects on QoL and hospital admissions irrespective of the intensity of the self-care support interventions. Intensively facilitated or case-managed self-care support interventions were associated with significant but minimal reductions in ED use. Augmented or ongoing support may thus be a possible method of optimising shorter- and longer-term service benefits, but a critical question then becomes whether or not this additional input is justified on the basis of the additional value it confers.

Clearly, further primary research is indicated to explore whether or not new models of self-care support can achieve more powerful and consistent effects on utilisation. This work should follow standard models for the development of complex interventions[215] and draw on relevant behavioural and social science models of patient experience and care access in LTCs. Primary research and meta-synthesis of qualitative data[31,32] has identified key elements of self-care support that may be essential for children and young people, including the acquisition of knowledge and skills, child-centred services, peer and professional support and positive beliefs about the effectiveness of their self-care regimes. Synthesising these data with new primary research may facilitate the timely development of new and effective evidence-based services.

Once adequate evidence of impact is achieved, research priorities should transition to the implementation of self-care support at a wider population level. The potential for effective models of self-care support for children and young people to be disseminated widely remains unclear. The studies included in our review typically evaluated the effects of self-care support in small or selected samples. Information pertaining the potential reach and adoption of different intervention models was limited and intervention fidelity inadequately reported. Most of the literature we examined originated from outside the UK. It is not clear

how well an international evidence base, accumulated over the last three decades, translates to contemporary NHS settings and cultures. Rigorous research, drawing on implementation science methodologies is required to determine the effectiveness and feasibly of self-care support in the context of routine service provision.

The views of children, young people and their parents

Our review is the first to simultaneously examine the effect of self-care support for LTCs on patient outcomes and health service utilisation in children and young people. In doing so, it acknowledges the potentially different interests of different stakeholder groups.

Different stakeholder communities can differ in their motivations and experiences of different research topics and their expectations of the actions that should be taken by others. Traditionally, distinction has been drawn between high-stake, high-influence communities (e.g. Department of Health policy-makers and commissioners) and high-stake, lower-influence groups[216] (in this case, front-line health professionals, parents and children and young people living with long-term physical and mental health conditions).

Professionals, parents, children and young people on our advisory panels were engaged in helping us to frame the outcomes of our review and in interpreting our findings. To ensure that our recommendations remain grounded in patient and professional priorities, the broader views of these individuals are documented in points 1–7 below. These views are those expressed by our PPI panel and are not limited to research recommendations arising from our review's findings. Suggestions for future research effort are provided but are not presented in priority order.

1. The current evidence base is not sufficiently developed to fully inform health policy decision-making. Further research is required to ascertain the effect of self-care support across a broader range of LTCs and to confirm which intervention characteristics (if any) optimise patient- and service-level effects. Such evidence is best generated through rigorously conducted RCTs.
2. There is a need to co-develop with patients, and their families, new evidence-based models of self-care support. These interventions should be designed to maximise benefits at both patient and population level and should be rigorously evaluated to determine their clinical effectiveness and cost-effectiveness.
3. Self-care is a life skill. Further research is needed to determine the longer-term effects of self-care support for children and young people. Primary research should include well-designed cohort studies with sustained (10-year) follow-ups.
4. Current evidence is limited to those patients who have volunteered to take part in research studies. Self-care support services and health services researchers need to consider the likely uptake, acceptability and impact of self-care support interventions for marginalised groups. These groups include looked-after children and children and young people with learning disabilities. New research studies should adopt innovative methods of patient recruitment.
5. Access to self-care support is important. Further effort should be directed towards the development of digital health technologies to facilitate self-care support. Research should explore barriers to, and enablers of, the implementation of these technologies in statutory services and the concurrent effects of these interventions on patient well-being, health service resources and costs.
6. Self-care support is challenging when patients have more than one LTC. Whole-systems development is needed to facilitate the integrated delivery of self-care support services. Further research is required to identify which models of self-care support (if any) are effective for children and young people with multiple LTCs.
7. Self-care can be expensive and can impact differently on different families. The costs of self-care support to children, parents and families should be quantified. The effect of self-care support on children and young people's school attendance should be assessed.

Acknowledgements

We would like to thank Kath Wright and the staff at Centre for Reviews and Dissemination, University of York, for their assistance with the searches. We thank Dr Katherine Stothard, Dr Gill Norman and Professor Karina Lovell for their help with abstract screening and study eligibility judgements and Irene Sanchez for her help with the quality appraisal of economic evaluations. We are grateful to Caitlin McWilliams for her help in preparing the report.

We especially thank the children and young people, parents and health professionals who gave up their time to join our PPI advisory panel and whose experiences, thoughts and recommendations have shaped and informed our review.

Contributions of authors

Penny Bee wrote the protocol for the study, managed the project, assessed studies for inclusion, extracted data on all studies, facilitated PPI contributions and had primary responsibility for writing the report.

Rebecca Pedley assessed studies for inclusion, extracted data on all studies, conducted analyses and wrote the report.

Amber Rithalia assessed studies for inclusion, extracted data on all studies and assisted with analyses.

Gerry Richardson contributed to the protocol for the study, extracted data on economic evaluations, advised on economic methodology and contributed to the writing of the report.

Steven Pryjmachuk contributed to the protocol for the study, assessed studies for inclusion and contributed to the writing of the report.

Susan Kirk contributed to the protocol for the study, assessed studies for inclusion, facilitated PPI contributions and contributed to the writing of the report.

Peter Bower contributed to the study protocol, guided review procedures, extracted study outcome data, led data analysis and contributed to the writing of the report.

Data sharing statement

This is a secondary research study and, therefore, no primary data have been generated. Further information can be obtained from the corresponding author.

References

1. Lopez AD, Murray CJ. *The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability from Diseases, Injuries, and Risk Factors in 1990 and Projected to 2020*. Boston, MA: Harvard School of Public Health on behalf of the World Bank; 1996.
2. Epping-Jordan JE, Pruitt SD, Bengoa R, Wagner EH. Improving the quality of health care for chronic conditions. *Qual Saf Health Care* 2004;**13**:299–305. https://doi.org/10.1136/qhc.13.4.299
3. NHS England. *Five Year Forward View*. Redditch: NHS England; 2014.
4. Department of Health. *The Mandate: A Mandate from the Government to the NHS Commissioning Board: April 2013 to March 2015*. London: Department of Health; 2012.
5. Department of Health. *Choosing Health: Making Healthy Choices Easier*. London: Her Majesty's Stationery Office; 2004.
6. Department of Health. *The NHS Improvement Plan: Putting People at the Heart Of Public Services*. London: Her Majesty's Stationery Office; 2004.
7. Department of Health. *Supporting People with Long Term Conditions: An NHS and Social Care Model to Support Local Innovation and Integration*. London: Her Majesty's Stationery Office; 2005.
8. Department of Health. *Self Care: A Real Choice – Self-Care Support – A Practical Option*. London: Her Majesty's Stationery Office; 2005.
9. Department of Health. *Our Health, Our Care, Our Say: A New Direction for Community Services*. London: Her Majesty's Stationery Office; 2006.
10. Department of Health. *Supporting People with Long Term Conditions to Self Care: A Guide to Developing Local Strategies and Good Practice*. London: Her Majesty's Stationery Office; 2006.
11. Department of Health. *Long Term Conditions Compendium of Information*. 3rd edn. London: Department of Health; 2012.
12. Department of Health. *Equity and Excellence: Liberating the NHS*. London: Her Majesty's Stationery Office; 2010.
13. Skills for Care Skills for Health. *Common Core Principles to Support Self-Care*. London: Her Majesty's Stationery Office; 2008.
14. Wanless D. *Securing Our Future Health: Taking a Long-Term View*. London: Her Majesty's Stationery Office; 2002.
15. Health Canada. *Supporting Self-Care: The Contribution of Nurses and Physicians*. Ottawa, ON: Health Canada; 2002.
16. Bury M, Newbould J, Taylor D. *A Rapid Review of the Current State of knowledge Regarding Lay-Led Self-Management of Chronic Illness: Evidence Review*. London: National Institute for Health and Care Excellence; 2005.
17. Rogers A. Advancing the expert patient? *Prim Health Care Res Dev* 2009;**10**:167–76. https://doi.org/10.1017/S1463423609001194
18. Lorig KR, Sobel DS, Stewart AL, Brown BW Jr, Bandura A, Ritter P, *et al.* Evidence suggesting that a chronic disease self-management program can improve health status while reducing hospitalization: a randomized trial. *Med Care* 1999;**37**:5–14. https://doi.org/10.1097/00005650-199901000-00003

19. Griffiths C, Foster G, Ramsay J, Eldridge S, Taylor S. How effective are expert patient (lay led) education programmes for chronic disease? *BMJ* 2007;**334**:1254–6. https://doi.org/10.1136/bmj.39227.698785.47

20. Guendelman S, Meade K, Benson M, Chen YQ, Samuels S. Improving asthma outcomes and self-management behaviors of inner-city children: a randomized trial of the Health Buddy interactive device and an asthma diary. *Arch Pediatr Adolesc Med* 2002;**156**:114–20. https://doi.org/10.1001/archpedi.156.2.114

21. Stevens CA, Wesseldine LJ, Couriel JM, Dyer AJ, Osman LM, Silverman M. Parental education and guided self-management of asthma and wheezing in the pre-school child: a randomised controlled trial. *Thorax* 2002;**57**:39–44. https://doi.org/10.1136/thorax.57.1.39

22. McPherson AC, Glazebrook C, Forster D, James C, Smyth A. A randomized, controlled trial of an interactive educational computer package for children with asthma. *Pediatrics* 2006;**117**:1046–54. https://doi.org/10.1542/peds.2005-0666

23. Wesseldine LJ, McCarthy P, Silverman M. Structured discharge procedure for children admitted to hospital with acute asthma: a randomised controlled trial of nursing practice. *Arch Dis Child* 1999;**80**:110–14. https://doi.org/10.1136/adc.80.2.110

24. Richardson G, Bojke C, Kennedy A, Reeves D, Bower P, Lee V, *et al.* What outcomes are important to patients with long term conditions? A discrete choice experiment. *Value Health* 2009;**12**:331–9. https://doi.org/10.1111/j.1524-4733.2008.00419.x

25. Kendall E, Rogers A. Extinguishing the social? State sponsored self-care policy and the Chronic Disease Self-management Programme. *Disabil Soc* 2007;**22**:129–43. https://doi.org/10.1080/09687590601141535

26. Panagioti M, Richardson G, Murray E, Rogers A, Kennedy A, Newman S, *et al.* Reducing Care Utilisation through Self-management Interventions (RECURSIVE): a systematic review and meta-analysis. *Health Serv Deliv Res* 2014;**2**(54).

27. Skinner TC, John M, Hampson SE. Social support and personal models of diabetes as predictors of self-care and well-being: a longitudinal study of adolescents with diabetes. *J Pediatr Psychol* 2000;**25**:257–67. https://doi.org/10.1093/jpepsy/25.4.257

28. Kyngäs H, Rissanen M. Support as a crucial predictor of good compliance of adolescents with a chronic disease. *J Clin Nurs* 2001;**10**:767–74. https://doi.org/10.1046/j.1365-2702.2001.00538.x

29. Dashiff CJ, McCaleb A, Cull V. Self-care of young adolescents with type 1 diabetes. *J Pediatr Nurs* 2006;**21**:222–32. https://doi.org/10.1016/j.pedn.2005.07.013

30. Herrman JW. Children's and young adolescents' voices: perceptions of the costs and rewards of diabetes and its treatment. *J Pediatr Nurs* 2006;**21**:211–21. https://doi.org/10.1016/j.pedn.2005.07.012

31. Kirk S, Beatty S, Callery P, Milnes L, Pryjmachuk S. *Evaluating Self-Care Support for Children and Young People with Long-Term Conditions*. Southampton: NIHR, Service Delivery and Organisation Programme; 2010.

32. Pryjmachuk S, Elvey R, Kirk S, Kendal S, Bower P, Catchpole R. Developing a model of mental health self-care support for children and young people through an integrated evaluation of available types of provision involving systematic review, meta-analysis and case study. *Health Serv Deliv Res* 2014;**2**(18). http://doi.org/10.3310/hsdr02180

33. Kirk S, Pryjmachuk S. Self-care of young people with long-term physical and mental health conditions. *Nurs Child Young People* 2016;**28**:20–8. https://doi.org/10.7748/ncyp.2016.e761

34. Gillard S, Edwards C, White S, White R, Adams K, Davies L, *et al. The Barriers and Facilitators of Supporting Self Care in Mental Health NHS Trusts*. Southampton: NIHR, Service Delivery and Organisation Programme; 2010.

35. Yi JP, Vitaliano PP, Smith RE, Yi JC, Weinger K. The role of resilience on psychological adjustment and physical health in patients with diabetes. *Br J Health Psychol* 2008;**13**:311–25. https://doi.org/10.1348/135910707X186994

36. Barlow J, Wright C, Sheasby J, Turner A, Hainsworth J. Self-management approaches for people with chronic conditions: a review. *Patient Educ Couns* 2002;**48**:177–87. https://doi.org/10.1016/S0738-3991(02)00032-0

37. Boger E, Ellis J, Latter S, Foster C, Kennedy A, Jones F, *et al.* Self-management and self-management support outcomes: a systematic review and mixed research synthesis of stakeholder views. *PLOS ONE* 2015;**10**:e0130990. https://doi.org/10.1371/journal.pone.0130990

38. Department of Health. *Improving Children and Young People's Health Outcomes: A System Wide Response*. London: Her Majesty's Stationery Office; 2013.

39. Department of Health. *Chief Medical Officer's Annual Report 2012: Our Children Deserve Better: Prevention Pays*. London: Her Majesty's Stationery Office; 2013.

40. Green H, McGinnity Á, Meltzer H, Ford T, Goodman R. *Mental Health of Children and Young People in Great Britain. A Survey Carried OUt by the Office for National Statistics on Behalf of the Department of Health and the Scottish Executive*. Basingstoke: Palgrave Macmillan; 2004.

41. Brooks F, Magnusson J, Klemera E, Spencer N, Morgan A. *HBSC England National Report: Health Behaviour in School-Aged Children (HBSC): World Health Organization Collaborative Cross National Study*. University of Hertfordshire: Department of Health/NHS England; 2015.

42. Department of Health/NHS England. *Future in Mind Promoting, Protecting and Improving Our Children and Young People's Mental Health and Wellbeing*. London: Department of Health; 2015.

43. Department of Health, Department for Education and Skills. *National Service Framework for Children, Young People and Maternity Services: Children and Young People Who Are Ill*. London: Department of Health; 2004.

44. Department of Health. *Healthy Lives, Brighter Futures*. London: Her Majesty's Stationery Office; 2009.

45. Department of Health. *Report of the Children and Young People's Health Outcomes Forum 2014/15*. London: Department of Health; 2015.

46. Hawley K. *Report on the Pilot of the Expert Patient Programme for Children January 2004–January 2005*. London: Expert Patient Programme; 2005.

47. Milnes LJ, Callery P. The adaptation of written self-management plans for children with asthma. *J Adv Nurs* 2003;**41**:444–53. https://doi.org/10.1046/j.1365-2648.2003.02551.x

48. Kennedy A, Rogers A, Bower P. Support for self care for patients with chronic disease. *BMJ* 2007;**335**:968–70. https://doi.org/10.1136/bmj.39372.540903.94

49. Fisher EB, Brownson CA, O'Toole ML, Shetty G, Anwuri VV, Glasgow RE. Ecological approaches to self-management: the case of diabetes. *Am J Public Health* 2005;**95**:1523–35. https://doi.org/10.2105/AJPH.2005.066084

50. Giarelli E, Bernhardt BA, Mack R, Pyeritz RE. Adolescents' transition to self-management of a chronic genetic disorder. *Qual Health Res* 2008;**18**:441–57. https://doi.org/10.1177/1049732308314853

51. Kirk S. Transitions in the lives of young people with complex healthcare needs. *Child Care Health Dev* 2008;**34**:567–75. https://doi.org/10.1111/j.1365-2214.2008.00862.x

52. Newbould J, Smith F, Francis SA. 'I'm fine doing it on my own': partnerships between young people and their parents in the management of medication for asthma and diabetes. *J Child Health Care* 2008;**12**:116–28. https://doi.org/10.1177/1367493508088549

53. Williams B, Mukhopadhyay S, Dowell J, Coyle J. From child to adult: an exploration of shifting family roles and responsibilities in managing physiotherapy for cystic fibrosis. *Soc Sci Med* 2007;**65**:2135–46. https://doi.org/10.1016/j.socscimed.2007.07.020

54. van Es SM, le Coq EM, Brouwer AI, Mesters I, Nagelkerke AF, Colland VT. Adherence-related behavior in adolescents with asthma: results from focus group interviews. *J Asthma* 1998;**35**:637–46. https://doi.org/10.3109/02770909809048966

55. Christian BJ, D'Auria JP, Fox LC. Gaining freedom: self-responsibility in adolescents with diabetes. *Pediatr Nurs* 1999;**25**:255–60, 266.

56. Bruzzese JM, Unikel L, Gallagher R, Evans D, Colland V. Feasibility and impact of a school-based intervention for families of urban adolescents with asthma: results from a randomized pilot trial. *Fam Process* 2008;**47**:95–113. https://doi.org/10.1111/j.1545-5300.2008.00241.x

57. Stinson J, Wilson R, Gill N, Yamada J, Holt J. A systematic review of internet-based self-management interventions for youth with health conditions. *J Pediatr Psychol* 2009;**34**:495–510. https://doi.org/10.1093/jpepsy/jsn115

58. Lindsay S, Kingsnorth S, Mcdougall C, Keating H. A systematic review of self-management interventions for children and youth with physical disabilities. *Disabil Rehabil* 2014;**36**:276–88. https://doi.org/10.3109/09638288.2013.785605

59. Dodge JA, Lewis PA, Stanton M, Wilsher J. Cystic fibrosis mortality and survival in the UK: 1947–2003. *Eur Respir J* 2007;**29**:522–6. https://doi.org/10.1183/09031936.00099506

60. Daley D, Jones K, Hutchings J, Thompson M. Attention deficit hyperactivity disorder in pre-school children: current findings, recommended interventions and future directions. *Child Care Health and Dev* 2009;**35**:754–66. https://doi.org/10.1111/j.1365-2214.2009.00938.x

61. Royal College of Paediatrics and Child Health (RCPCH). *Growing Up With Diabetes: Children and Young People with Diabetes in England*. London: RCPCH; 2009.

62. Higgins J, Green S. *Cochrane Handbook for Systematic Reviews of Interventions (Version 5.0.1)*. London: The Cochrane Collaboration: 2009. URL: www.cochrane-handbook.org/ (accessed 11 April 2017).

63. Effective Practice and Organisation of Care (EPOC). *EPOC Resources for Review Authors*. Oslo: Norwegian Knowledge Centre for the Health Services; 2015. URL: http://epoc.cochrane.org/epoc-specific-resources-review-authors (accessed 11 April 2017).

64. Lorig KR, Holman H. Self-management education: history, definition, outcomes, and mechanisms. *Ann Behav Med* 2003;**26**:1–7. https://doi.org/10.1207/S15324796ABM2601_01

65. Tsiligianni I, Kocks J, Tzanakis N, Siafakas N, van der Molen T. Factors that influence disease-specific quality of life or health status in patients with COPD: a review and meta-analysis of Pearson correlations. *Prim Care Respir J* 2011;**20**:257–68. https://doi.org/10.4104/pcrj.2011.00029

66. Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *Am J Public Health* 1999;**89**:1322–7. https://doi.org/10.2105/AJPH.89.9.1322

67. Drummond M, Stoddart G, Torrance G. *Methods for the Economic Evaluation of Health Care Programmes*. Oxford: Oxford Medical Publications; 1997.

68. Schulz KF, Chalmers I, Hayes RJ, Altman DG. Empirical evidence of bias. Dimensions of methodological quality associated with estimates of treatment effects in controlled trials. *JAMA* 1995;**273**:408–12. https://doi.org/10.1001/jama.1995.03520290060030

69. Pildal J, Hróbjartsson A, Jørgensen KJ, Hilden J, Altman DG, Gøtzsche PC. Impact of allocation concealment on conclusions drawn from meta-analyses of randomized trials. *Int J Epidemiol* 2007;**36**:847–57. https://doi.org/10.1093/ije/dym087

70. Lipsey M, Wilson D. *Practical Meta-Analysis*. Newbury Park, CA: Sage; 2001.

71. Dieterich M, Irving CB, Park B, Marshall M. Intensive case management for severe mental illness. *Cochrane Database Syst Rev* 2010;**10**:CD007906. https://doi.org/10.1002/14651858.CD007906.pub2

72. Altman DG, Bland JM. Detecting skewness from summary information. *BMJ* 1996;**313**:1200. https://doi.org/10.1136/bmj.313.7066.1200

73. Higgins JP, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. *BMJ* 2003;**327**:557–60. https://doi.org/10.1136/bmj.327.7414.557

74. Egger M, Davey Smith G, Schneider M, Minder C. Bias in meta-analysis detected by a simple, graphical test. *BMJ* 1997;**315**:629–34. https://doi.org/10.1136/bmj.315.7109.629

75. Sterne JA, Egger M. Funnel plots for detecting bias in meta-analysis: guidelines on choice of axis. *J Clin Epidemiol* 2001;**54**:1046–55. https://doi.org/10.1016/S0895-4356(01)00377-8

76. Atherly A, Nurmagambetov T, Williams S, Griffith M. An economic evaluation of the school-based 'power breathing' asthma program. *J Asthma* 2009;**46**:596–9. https://doi.org/10.1080/02770900903006257

77. Bartholomew LK, Gold RS, Parcel GS, Czyzewski DI, Sockrider MM, Fernandez M, *et al.* Watch, discover, think, and act: evaluation of computer-assisted instruction to improve asthma self-management in inner-city children. *Patient Educ Couns* 2000;**39**:269–80. https://doi.org/10.1016/S0738-3991(99)00046-4

78. Bird SR, Noronha M, Kurowski W, Orkin C, Sinnott H. Integrated care facilitation model reduces use of hospital resources by patients with pediatric asthma. *J Health Qual* 2012;**34**:25–33. https://doi.org/10.1111/j.1945-1474.2011.00143.x

79. Brazil K, McLean L, Abbey D, Musselman C. The influence of health education on family management of childhood asthma. *Patient Educ Couns* 1997;**30**:107–18. https://doi.org/10.1016/S0738-3991(96)00913-5

80. Brown JV, Bakeman R, Celano MP, Demi AS, Kobrynski L, Wilson SR. Home-based asthma education of young low-income children and their families. *J Pediatr Psychol* 2002;**27**:677–88. https://doi.org/10.1093/jpepsy/27.8.677

81. Browning S, Corrigall R, Garety P, Emsley R, Jolley S. Psychological interventions for adolescent psychosis: a pilot controlled trial in routine care. *Eur Psychiatry* 2013;**28**:423–6. https://doi.org/10.1016/j.eurpsy.2013.05.008

82. Bruzzese JM, Sheares BJ, Vincent EJ, Du Y, Sadeghi H, Levison MJ, *et al.* Effects of a school-based intervention for urban adolescents with asthma. A controlled trial. *Am J Respir Crit Care Med* 2011;**183**:998–1006. https://doi.org/10.1164/rccm.201003-0429OC

83. Bryant-Stephens T, Kurian C, Guo R, Zhao H. Impact of a household environmental intervention delivered by lay health workers on asthma symptom control in urban, disadvantaged children with asthma. *Am J Public Health* 2009;**99**(Suppl. 3):S657–65. https://doi.org/10.2105/AJPH.2009.165423

84. Butz A, Pham L, Lewis L, Lewis C, Hill K, Walker J, *et al.* Rural children with asthma: impact of a parent and child asthma education program. *J Asthma* 2005;**42**:813–21. https://doi.org/10.1080/02770900500369850

85. Walker J, Winkelstein M, Land C, Lewis-Boyer L, Quartey R, Pham L, *et al.* Factors that influence quality of life in rural children with asthma and their parents. *J Pediatr Health Care* 2008;**22**:343–50. https://doi.org/10.1016/j.pedhc.2007.07.007

86. Butz A, Kub J, Donithan M, James NT, Thompson RE, Bellin M, *et al.* Influence of caregiver and provider communication on symptom days and medication use for inner-city children with asthma. *J Asthma* 2010;**47**:478–85. https://doi.org/10.3109/02770901003692793

87. Byford S, Harrington R, Torgerson D, Kerfoot M, Dyer E, Harrington V, *et al.* Cost-effectiveness analysis of a home-based social work intervention for children and adolescents who have deliberately poisoned themselves. Results of a randomised controlled trial. *Br J Psychiatry* 1999;**174**:56–62. https://doi.org/10.1192/bjp.174.1.56

88. Harrington R, Kerfoot M, Dyer E, McNiven F, Gill J, Harrington V, *et al.* Randomized trial of a home-based family intervention for children who have deliberately poisoned themselves. *J Am Acad Child Adolesc Psychiatry* 1998;**37**:512–18. https://doi.org/10.1016/S0890-8567(14)60001-0

89. Byford S, Barrett B, Roberts C, Wilkinson P, Dubicka B, Kelvin R, *et al.* Cost-effectiveness of selective serotonin reuptake inhibitors and routine specialist care with and without cognitive-behavioural therapy in adolescents with major depression. *Br J Psychiatry* 2007;**191**:521–7. https://doi.org/10.1192/bjp.bp.107.038984

90. Goodyer I, Dubicka B, Wilkinson P, Kelvin R, Roberts C, Byford S, *et al.* Selective serotonin reuptake inhibitors (SSRIs) and routine specialist care with and without cognitive behaviour therapy in adolescents with major depression: randomised controlled trial. *BMJ* 2007;**335**:142. https://doi.org/10.1136/bmj.39224.494340.55

91. Byford S, Barrett B, Roberts C, Clark A, Edwards V, Smethurst N, *et al.* Economic evaluation of a randomised controlled trial for anorexia nervosa in adolescents. *Br J Psychiatry* 2007;**191**:436–40. https://doi.org/10.1192/bjp.bp.107.036806

92. Gowers SG, Clark A, Roberts C, Griffiths A, Edwards V, Bryan C, *et al.* Clinical effectiveness of treatments for anorexia nervosa in adolescents: randomised controlled trial. *Br J Psychiatry* 2007;**191**:427–35. https://doi.org/10.1192/bjp.bp.107.036764

93. Gowers SG, Clark AF, Roberts C, Byford S, Barrett B, Griffiths A, *et al.* A randomised controlled multicentre trial of treatments for adolescent anorexia nervosa including assessment of cost-effectiveness and patient acceptability – The TOuCAN trial. *Health Technol Assess* 2010;**14**(15). https://doi.org/10.3310/hta14150

94. Calvo A, Moreno M, Ruiz-Sancho A, Rapado-Castro M, Moreno C, Sánchez-Gutiérrez T, *et al.* Intervention for adolescents with early-onset psychosis and their families: a randomized controlled trial. *J Am Acad Child Adolesc Psychiatry* 2014;**53**:688–96. https://doi.org/10.1016/j.jaac.2014.04.004

95. Cano-Garcinuño A, Díaz-Vázquez C, Carvajal-Urueña I, Praena-Crespo M, Gatti-Viñoly A, García-Guerra I. Group education on asthma for children and caregivers: a randomized, controlled trial addressing effects on morbidity and quality of life. *J Invest Allerg Clin* 2007;**17**:216–26.

96. Carswell F, Robinson EJ, Hek G, Shenton T. A Bristol experience: benefits and cost of an 'asthma nurse' visiting the homes of asthmatic children. *Bristol Med Chir J* 1989;**104**:11–12.

97. Celano MP, Holsey CN, Kobrynski LJ. Home-based family intervention for low-income children with asthma: a randomized controlled pilot study. *J Fam Psychol* 2012;**26**:171–8. https://doi.org/10.1037/a0027218

98. Chan DS, Callahan CW, Sheets SJ, Moreno CN, Malone FJ. An Internet-based store-and-forward video home telehealth system for improving asthma outcomes in children. *Am J Health Syst Pharm* 2003;**60**:1976–81.

99. Chan DS, Callahan CW, Hatch-Pigott VB, Lawless A, Proffitt HL, Manning NE, *et al.* Internet-based home monitoring and education of children with asthma is comparable to ideal office-based care: results of a 1-year asthma in-home monitoring trial. *Pediatrics* 2007;**119**:569–78. https://doi.org/10.1542/peds.2006-1884

100. Christie D, Thompson R, Sawtell M, Allen E, Cairns J, Smith F, *et al.* Structured, intensive education maximising engagement, motivation and long-term change for children and young people with diabetes: a cluster randomised controlled trial with integral process and economic evaluation – the CASCADE study. *Health Technol Assess* 2014;**18**(20). https://doi.org/10.3310/hta18200

101. Cicutto L, Murphy S, Coutts D, O'Rourke J, Lang G, Chapman C, *et al.* Breaking the access barrier: evaluating an asthma center's efforts to provide education to children with asthma in schools. *Chest* 2005;**128**:1928–35. https://doi.org/10.1378/chest.128.4.1928

102. Cicutto L, To T, Murphy S. A randomized controlled trial of a public health nurse-delivered asthma program to elementary schools. *J School Health* 2013;**83**:876–84. https://doi.org/10.1111/josh.12106

103. Clark NM, Gong M, Kaciroti N, Yu J, Wu G, Zeng Z, *et al.* A trial of asthma self-management in Beijing schools. *Chronic Illn* 2005;**1**:31–8. https://doi.org/10.1177/17423953050010010101

104. Cowie RL, Underwood MF, Little CB, Mitchell I, Spier S, Ford GT. Asthma in adolescents: a randomized, controlled trial of an asthma program for adolescents and young adults with severe asthma. *Can Respir J* 2002;**9**:253–9. https://doi.org/10.1155/2002/106262

105. Domino ME, Burns BJ, Silva SG, Kratochvil CJ, Vitiello B, Reinecke MA, *et al.* Cost-effectiveness of treatments for adolescent depression: results from TADS. *Am J Psychiatry* 2008;**165**:588–96. https://doi.org/10.1176/appi.ajp.2008.07101610

106. Domino ME, Foster EM, Vitiello B, Kratochvil CJ, Burns BJ, Silva SG, *et al.* Relative cost-effectiveness of treatments for adolescent depression: 36-week results from the TADS randomized trial. *J Am Acad Child Adolesc Psychiatry* 2009;**48**:711–20. https://doi.org/10.1097/CHI.0b013e3181a2b319

107. March J, Silva S, Vitiello B, TADS Team. The Treatment for Adolescents with Depression Study (TADS): methods and message at 12 weeks. *J Am Acad Child Adolesc Psychiatry* 2006;**45**:1393–403. https://doi.org/10.1097/01.chi.0000237709.35637.c0

108. March JS, Vitiello B. Clinical messages from the Treatment for Adolescents With Depression Study (TADS). *Am J Psychiatry* 2009;**166**:1118–23. https://doi.org/10.1176/appi.ajp.2009.08101606

109. Treatment for Adolescents with Depression Study (TADS) Team. The Treatment for Adolescents with Depression Study (TADS): demographic and clinical characteristics. *J Am Acad Child Psy* 2005;**44**:28–40. https://doi.org/10.1097/01.chi.0000145807.09027.82

110. Donaldson D, Spirito A, Esposito-Smythers C. Treatment for adolescents following a suicide attempt: results of a pilot trial. *J Am Acad Child Adolesc Psychiatry* 2005;**44**:113–20. https://doi.org/10.1097/00004583-200502000-00003

111. Dougherty GE, Soderstrom L, Schiffrin A. An economic evaluation of home care for children with newly diagnosed diabetes: results from a randomized controlled trial. *Med Care* 1998;**36**:586–98. https://doi.org/10.1097/00005650-199804000-00014

112. Dougherty G, Schiffrin A, White D, Soderstrom L, Sufrategui M. Home-based management can achieve intensification cost-effectively in type I diabetes. *Pediatrics* 1999;**103**:122–8. https://doi.org/10.1542/peds.103.1.122

113. Eakin MN, Rand CS, Bilderback A, Bollinger ME, Butz A, Kandasamy V, *et al.* Asthma in Head Start children: effects of the Breathmobile program and family communication on asthma outcomes. *J Allergy Clin Immunol* 2012;**129**:664–70. https://doi.org/10.1016/j.jaci.2011.10.013

114. Edwards RT, Céilleachair A, Bywater T, Hughes DA, Hutchings J. Parenting programme for parents of children at risk of developing conduct disorder: cost effectiveness analysis. *BMJ* 2007;**334**:682. https://doi.org/10.1136/bmj.39126.699421.55

115. Hutchings J, Gardner F, Bywater T, Daley D, Whitaker C, Jones K, *et al.* Parenting intervention in Sure Start services for children at risk of developing conduct disorder: pragmatic randomised controlled trial. *BMJ* 2007;**334**:678. https://doi.org/10.1136/bmj.39126.620799.55

116. Espinoza-Palma T, Zamorano A, Arancibia F, Bustos MF, Silva MJ, Cardenas C, *et al.* Effectiveness of asthma education with and without a self-management plan in hospitalized children. *J Asthma* 2009;**46**:906–10. https://doi.org/10.3109/02770900903199979

117. Esposito-Smythers C, Spirito A, Kahler CW, Hunt J, Monti P. Treatment of co-occurring substance abuse and suicidality among adolescents: a randomized trial. *J Consult Clin Psychol* 2011;**79**:728–39. https://doi.org/10.1037/a0026074

118. Farber HJ, Oliveria L. Trial of an asthma education program in an inner-city pediatric emergency department. *Pediatr Asthma Aller* 2004;**17**:107–15. https://doi.org/10.1089/0883187041269913

119. Flapper BC, Duiverman EJ, Gerritsen J, Postema K, van der Schans CP. Happiness to be gained in paediatric asthma care. *Eur Respir J* 2008;**32**:1555–62. https://doi.org/10.1183/09031936.00140407

120. Flores G, Bridon C, Torres S, Perez R, Walter T, Brotanek J, *et al.* Improving asthma outcomes in minority children: a randomized, controlled trial of parent mentors. *Pediatrics* 2009;**124**:1522–32. https://doi.org/10.1542/peds.2009-0230

121. Foster EM, Jensen PS, Schlander M, Pelham WE Jr, Hechtman L, Arnold LE, *et al.* Treatment for ADHD: Is more complex treatment cost-effective for more complex cases? *Health Serv Res* 2007;**42**:165–82. https://doi.org/10.1111/j.1475-6773.2006.00599.x

122. Swanson JM, Kraemer HC, Hinshaw SP, Arnold LE, Conners CK, Abikoff HB, *et al.* Clinical relevance of the primary findings of the MTA: success rates based on severity of ADHD and ODD symptoms at the end of treatment. *J Am Acad Child Adolesc Psychiatry* 2001;**40**:168–79. https://doi.org/10.1097/00004583-200102000-00011

123. Wells KC, Pelham WE, Kotkin RA, Hoza B, Abikoff HB, Abramowitz A, *et al.* Psychosocial treatment strategies in the MTA study: rationale, methods, and critical issues in design and implementation. *J Abnorm Child Psychol* 2000;**28**:483–505. https://doi.org/10.1023/A:1005174913412

124. Molina BS, Hinshaw SP, Swanson JM, Arnold LE, Vitiello B, Jensen PS, *et al.* The MTA at 8 years: prospective follow-up of children treated for combined-type ADHD in a multisite study. *J Am Acad Child Adolesc Psychiatry* 2009;**48**:484–500. https://doi.org/10.1097/CHI.0b013e31819c23d0

125. Jensen PS, Garcia JA, Glied S, Crowe M, Foster M, Schlander M, *et al.* Cost-effectiveness of ADHD treatments: findings from the multimodal treatment study of children with ADHD. *Am J Psychiatry* 2005;**162**:1628–36. https://doi.org/10.1176/appi.ajp.162.9.1628

126. The MTA Cooperative Group. A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder. *Arch Gen Psychiat* 1999;**56**:1073–86. https://doi.org/10.1001/archpsyc.56.12.1073

127. Franklin VL, Waller A, Pagliari C, Greene SA. A randomized controlled trial of Sweet Talk, a text-messaging system to support young people with diabetes. *Diabet Med* 2006;**23**:1332–8. https://doi.org/10.1111/j.1464-5491.2006.01989.x

128. Galbreath AD, Smith B, Wood PR, Inscore S, Forkner E, Vazquez M, *et al.* Assessing the value of disease management: impact of 2 disease management strategies in an underserved asthma population. *Ann Allergy Asthma Immunol* 2008;**101**:599–607. https://doi.org/10.1016/S1081-1206(10)60222-0

129. Garbutt JM, Banister C, Highstein G, Sterkel R, Epstein J, Bruns J, *et al.* Telephone coaching for parents of children with asthma: impact and lessons learned. *Arch Pediatr Adolesc Med* 2010;**164**:625–30. https://doi.org/10.1001/archpediatrics.2010.91

130. Godart N, Berthoz S, Curt F, Perdereau F, Rein Z, Wallier J, *et al.* A randomized controlled trial of adjunctive family therapy and treatment as usual following inpatient treatment for anorexia nervosa adolescents. *PLOS ONE* 2012;**7**:e28249. https://doi.org/10.1371/journal.pone.0028249

131. Gorelick MH, Meurer JR, Walsh-Kelly CM, Brousseau DC, Grabowski L, Cohn J, *et al.* Emergency department allies: a controlled trial of two emergency department-based follow-up interventions to improve asthma outcomes in children. *Pediatrics* 2006;**117**:S127–34. https://doi.org/10.1542/peds.2005-2000J

132. Grainger-Rousseau TJ, Mc Elnay JC. A model for community pharmacist involvement with general practitioners in the management of asthma patients. *J Appl Ther* 1996;**1**:145–61.

133. Green JM, Wood AJ, Kerfoot MJ, Trainor G, Roberts C, Rothwell J, *et al.* Group therapy for adolescents with repeated self harm: randomised controlled trial with economic evaluation. *BMJ* 2011;**342**:d682. https://doi.org/10.1136/bmj.d682

134. Guendelman S, Meade K, Chen YQ, Benson M. Asthma control and hospitalizations among inner-city children: results of a randomized trial. *Telemed J E Health* 2004;**10**(Suppl. 2):6–14. https://doi.org/10.1089/1530562042632047

135. Hederos CA, Janson S, Hedlin G. Six-year follow-up of an intervention to improve the management of preschool children with asthma. *Acta Paediatr* 2009;**98**:1939–44. https://doi.org/10.1111/j.1651-2227.2009.01477.x

136. Hederos CA, Janson S, Hedlin G. Group discussions with parents have long-term positive effects on the management of asthma with good cost-benefit. *Acta Paediatr* 2005;**94**:602–8. https://doi.org/10.1080/08035250410023322

137. Homer C, Susskind O, Alpert HR, Owusu C, Schneider L, Rappaport LA, *et al.* An evaluation of an innovative multimedia educational software program for asthma management: report of a randomized, controlled trial. *Pediatrics* 2000;**106**:210–15.

138. Horner SD, Brown A. Evaluating the effect of an asthma self-management intervention for rural families. *J Asthma* 2014;**51**:168–77. https://doi.org/10.3109/02770903.2013.855785

139. Hughes DM, McLeod M, Garner B, Goldbloom RB. Controlled trial of a home and ambulatory program for asthmatic children. *Pediatrics* 1991;**87**:54–61.

140. Husted GR, Thorsteinsson B, Esbensen BA, Gluud C, Winkel P, Hommel E, *et al.* Effect of guided self-determination youth intervention integrated into outpatient visits versus treatment as usual on glycemic control and life skills: a randomized clinical trial in adolescents with type 1 diabetes. *Trials* 2014;**15**:321. https://doi.org/10.1186/1745-6215-15-321

141. Indinnimeo L, Mercuri M, Marolla F, Raponi M, Ronchetti R. Asthma education program in outpatient children. *Ital J Pediatr* 1997;**23**:873–7.

142. Indinnimeo L, Bonci E, Capra L, La Grutta S, Monaco F, Paravati F, *et al.* Clinical effects of a long-term educational program for children with asthma – Aironet. A 1-yr randomized controlled trial. *Pediatr Allergy Immunol* 2009;**20**:654–9. https://doi.org/10.1111/j.1399-3038.2009.00857.x

143. Joseph CL, Peterson E, Havstad S, Johnson CC, Hoerauf S, Stringer S, *et al.* A web-based, tailored asthma management program for urban African-American high school students. *Am J Respir Crit Care Med* 2007;**175**:888–95. https://doi.org/10.1164/rccm.200608-1244OC

144. Kamps JL, Rapoff MA, Roberts MC, Varela RE, Barnard M, Olson N. Improving adherence to inhaled corticosteroids in children with asthma: a pilot of a randomized clinical trial. *Child Health Care* 2008;**37**:261–77. https://doi.org/10.1080/02739610802437335

145. Kattan M, Stearns SC, Crain EF, Stout JW, Gergen PJ, Evans R, *et al.* Cost-effectiveness of a home-based environmental intervention for inner-city children with asthma. *J Allergy Clin Immunol* 2005;**116**:1058–63. https://doi.org/10.1016/j.jaci.2005.07.032

146. Morgan WJ, Crain EF, Gruchalla RS, O'Connor GT, Kattan M, Evans R, *et al.* Results of a home-based environmental intervention among urban children with asthma. *N Engl J Med* 2004;**351**:1068–80. https://doi.org/10.1056/NEJMoa032097

147. Katz LY, Cox BJ, Gunasekara S, Miller AL. Feasibility of dialectical behavior therapy for suicidal adolescent inpatients. *J Am Acad Child Adolesc Psychiatry* 2004;**43**:276–82. https://doi.org/10.1097/00004583-200403000-00008

148. Khan MS, O'Meara M, Stevermuer TL, Henry RL. Randomized controlled trial of asthma education after discharge from an emergency department. *J Paediatr Child Health* 2004;**40**:674–7. https://doi.org/10.1111/j.1440-1754.2004.00490.x

149. Khan MS, O'Meara M, Henry RL. Background severity of asthma in children discharged from the emergency department. *J Paediatr Child Health* 2003;**39**:432–5. https://doi.org/10.1046/j.1440-1754.2003.00183.x

150. Krieger J, Takaro TK, Song L, Beaudet N, Edwards K. A randomized controlled trial of asthma self-management support comparing clinic-based nurses and in-home community health workers: the Seattle-King County Healthy Homes II Project. *Arch Pediat Adol Med* 2009;**163**:141–9. https://doi.org/10.1001/archpediatrics.2008.532

151. Sunshine J, Song L, Krieger J. Written action plan use in inner-city children: is it independently associated with improved asthma outcomes? *Ann Allergy Asthma Immunol* 2011;**107**:207–13. https://doi.org/10.1016/j.anai.2011.04.015

152. Krishna S, Francisco BD, Balas EA, König P, Graff GR, Madsen RW, *et al.* Internet-enabled interactive multimedia asthma education program: a randomized trial. *Pediatrics* 2003;**111**:503–10. https://doi.org/10.1542/peds.111.3.503

153. Krishna S, Balas EA, Francisco BD, Konig P. Effective and sustainable multimedia education for children with asthma: a randomized controlled trial. *Child Health Care* 2006;**35**:75–90. https://doi.org/10.1207/s15326888chc3501_7

154. Lewis CE, Rachelefsky G, Lewis MA, de la Sota A, Kaplan M. A randomized trial of A.C.T. (asthma care training) for kids. *Pediatrics* 1984;**74**:478–86.

155. Lynch FL, Dickerson JF, Clarke G, Vitiello B, Porta G, Wagner KD, *et al.* Incremental cost-effectiveness of combined therapy vs medication only for youth with selective serotonin reuptake inhibitor-resistant depression: treatment of SSRI-resistant depression in adolescents trial findings. *Arch Gen Psychiatry* 2011;**68**:253–62. https://doi.org/10.1001/archgenpsychiatry.2011.9

156. Asarnow JR, Jaycox LH, Tang L, Duan N, LaBorde AP, Zeledon LR, *et al.* Long-term benefits of short-term quality improvement interventions for depressed youths in primary care. *Am J Psychiatry* 2009;**166**:1002–10. https://doi.org/10.1176/appi.ajp.2009.08121909

157. Brent D, Emslie G, Clarke G, Wagner KD, Asarnow JR, Keller M, *et al.* Switching to another SSRI or to venlafaxine with or without cognitive behavioral therapy for adolescents with SSRI-resistant depression: the TORDIA randomized controlled trial. *JAMA* 2008;**299**:901–13. https://doi.org/10.1001/jama.299.8.901

158. Madge P, McColl J, Paton J. Impact of a nurse-led home management training programme in children admitted to hospital with acute asthma: a randomised controlled study. *Thorax* 1997;**52**:223–8. https://doi.org/10.1136/thx.52.3.223

159. Maslennikova GY, Morosova ME, Salman NV, Kulikov SM, Oganov RG. Asthma education programme in Russia: educating patients. *Patient Educ Couns* 1998;**33**:113–27. https://doi.org/10.1016/S0738-3991(97)00073-6

160. McGhan SL, Wong E, Jhangri GS, Wells HM, Michaelchuk DR, Boechler VL, *et al.* Evaluation of an education program for elementary school children with asthma. *J Asthma* 2003;**40**:523–33. https://doi.org/10.1081/JAS-120018785

161. McGhan SL, Wong E, Sharpe HM, Hessel PA, Mandhane P, Boechler VL, *et al.* A children's asthma education program: Roaring Adventures of Puff (RAP), improves quality of life. *Can Respir J* 2010;**17**:67–73. https://doi.org/10.1155/2010/327650

162. Mehlum L, Tørmoen AJ, Ramberg M, Haga E, Diep LM, Laberg S, *et al.* Dialectical behavior therapy for adolescents with repeated suicidal and self-harming behavior: a randomized trial. *J Am Acad Child Adolesc Psychiatry* 2014;**53**:1082–91. https://doi.org/10.1016/j.jaac.2014.07.003

163. Mitchell EA, Ferguson V, Norwood M. Asthma education by community child health nurses. *Arch Dis Child* 1986;**61**:1184–9. https://doi.org/10.1136/adc.61.12.1184

164. Muntz R, Hutchings J, Edwards RT, Hounsome B, O'Céilleachair A. Economic evaluation of treatments for children with severe behavioural problems. *J Ment Health Policy Econ* 2004;**7**:177–89.

165. Hutchings J, Appleton P, Smith M, Lane E, Nash S. Evaluation of two treatments for children with severe behaviour problems: child behaviour and maternal mental health outcomes. *Behav Cogn Psychoth* 2002;**30**:279–95. https://doi.org/10.1017/S1352465802003041

166. Nansel TR, Anderson BJ, Laffel LMB, Simons-Morton BG, Weissberg-Benchell J, Wysocki T, *et al.* A multisite trial of a clinic-integrated intervention for promoting family management of pediatric type 1 diabetes: feasibility and design. *Pediatr Diabetes* 2009;**10**:105–15. https://doi.org/10.1111/j.1399-5448.2008.00448.x

167. Ng D, Chow P, Lai W, Chan K, Chang B, So H. Effect of a structured asthma education program on hospitalized asthmatic children: A randomized controlled study. *Pediatr Int* 2006;**48**:158–62. https://doi.org/10.1111/j.1442-200X.2006.02185.x

168. O'Neill D, McGilloway S, Donnelly M, Bywater T, Kelly P. A cost-effectiveness analysis of the Incredible Years parenting programme in reducing childhood health inequalities. *Eur J Health Econ* 2013;**14**:85–94. https://doi.org/10.1007/s10198-011-0342-y

169. McGilloway S, Ni Mhaille G, Bywater T, Furlong M, Leckey Y, Kelly P, *et al.* A parenting intervention in childhood behavioural problems: a randomized controlled trial in disadvantaged community-based settings. *J Consult Clin Psych* 2012;**80**:116–27. https://doi.org/10.1037/a0026304

170. Otsuki M, Eakin MN, Rand CS, Butz AM, Hsu VD, Zuckerman IH, *et al.* Adherence feedback to improve asthma outcomes among inner-city children: a randomized trial. *Pediatrics* 2009;**124**:1513–21. https://doi.org/10.1542/peds.2008-2961

171. Quint DM, Teach SJ. IMPACT DC: reconceptualizing the role of the emergency department for urban children with asthma. *Clin Pediatr Emerg Med* 2009;**10**:115–21. https://doi.org/10.1016/j.cpem.2009.03.003

172. Teach SJ, Crain EF, Quint DM, Hylan ML, Joseph JG. Improved asthma outcomes in a high-morbidity pediatric population: results of an emergency department-based randomized clinical trial. *Arch Pediat Adol Med* 2006;**160**:535–41. https://doi.org/10.1001/archpedi.160.5.535

173. Richardson LP, Ludman E, McCauley E, Lindenbaum J, Larison C, Zhou C, *et al.* Collaborative care for adolescents with depression in primary care: a randomized clinical trial. *JAMA* 2014;**312**:809–16. https://doi.org/10.1001/jama.2014.9259

174. Rikkers-Mutsaerts ER, Winters AE, Bakker MJ, van Stel HF, van der Meer V, de Jongste JC, *et al.* Internet-based self-management compared with usual care in adolescents with asthma: a randomized controlled trial. *Pediatr Pulmonol* 2012;**47**:1170–9. https://doi.org/10.1002/ppul.22575

175. Ronchetti R, Indinnimeo L, Bonci E, Corrias A, Evans D, Hindi-Alexander M, *et al.* Asthma self-management programmes in a population of Italian children: a multicentric study. Italian Study Group on Asthma Self-Management Programmes. *Eur Respir J* 1997;**10**:1248–53. https://doi.org/10.1183/09031936.97.10061248

176. Rund BR, Moe L, Sollien T, Fjell A, Borchgrevink T, Hallert M, *et al.* The Psychosis Project: outcome and cost-effectiveness of a psychoeducational treatment programme for schizophrenic adolescents. *Acta Psychiatr Scand* 1994;**89**:211–18. https://doi.org/10.1111/j.1600-0447.1994.tb08094.x

177. Runge C, Lecheler J, Horn M, Tews JT, Schaefer M. Outcomes of a Web-based patient education program for asthmatic children and adolescents. *Chest* 2006;**129**:581–93. https://doi.org/10.1378/chest.129.3.581

178. Schmidt U, Lee S, Beecham J, Perkins S, Treasure J, Yi I, *et al.* A randomized controlled trial of family therapy and cognitive behavior therapy guided self-care for adolescents with bulimia nervosa and related disorders. *Am J Psychiatry* 2007;**164**:591–8. https://doi.org/10.1176/ajp.2007.164.4.591

179. Seid M, Varni JW, Gidwani P, Gelhard LR, Slymen DJ. Problem-solving skills training for vulnerable families of children with persistent asthma: report of a randomized trial on health-related quality of life outcomes. *J Pediatr Psychol* 2010;**35**:1133–43. https://doi.org/10.1093/jpepsy/jsp133

180. Shames RS, Sharek P, Mayer M, Robinson TN, Hoyte EG, Gonzalez-Hensley F, *et al.* Effectiveness of a multicomponent self-management program in at-risk, school-aged children with asthma. *Ann Allergy Asthma Immunol* 2004;**92**:611–18. https://doi.org/10.1016/S1081-1206(10)61426-3

181. Sockrider MM, Abraham S, Brooks E, Caviness AC, Pilney S, Koerner C, *et al.* Delivering tailored asthma family education in a pediatric emergency department setting: a pilot study. *Pediatrics* 2006;**117**:S135–44. https://doi.org/10.1542/peds.2005-2000K

182. Southam-Gerow MA, Weisz JR, Chu BC, McLeod BD, Gordis EB, Connor-Smith JK. Does cognitive behavioral therapy for youth anxiety outperform usual care in community clinics? An initial effectiveness test. *J Am Acad Child Psy* 2010;**49**:1043–52. https://doi.org/10.1016/j.jaac.2010.06.009

183. Staab D, von Rueden U, Kehrt R, Erhart M, Wenninger K, Kamtsiuris P, *et al.* Evaluation of a parental training program for the management of childhood atopic dermatitis. *Pediatr Allergy Immunol* 2002;**13**:84–90. https://doi.org/10.1034/j.1399-3038.2002.01005.x

184. Sullivan SD, Weiss KB, Lynn H, Mitchell H, Kattan M, Gergen PJ, *et al.* The cost-effectiveness of an inner-city asthma intervention for children. *J Allergy Clin Immunol* 2002;**110**:576–81. https://doi.org/10.1067/mai.2002.128009

185. Evans R III, Gergen PJ, Mitchell H, Kattan M, Kercsmar C, Crain E, *et al.* A randomized clinical trial to reduce asthma morbidity among inner-city children: results of the National Cooperative Inner-City Asthma Study. *J Pediatr* 1999;**135**:332–8. https://doi.org/10.1016/S0022-3476(99)70130-7

186. Svoren BM, Butler D, Levine BS, Anderson BJ, Laffel LM. Reducing acute adverse outcomes in youths with type 1 diabetes: a randomized, controlled trial. *Pediatrics* 2003;**112**:914–22. https://doi.org/10.1542/peds.112.4.914

187. Szczepanski R, Gebert N, Hümmelink R, Könning J, Schmidt S, Runde B, *et al.* [Outcome of structured asthma education in childhood and adolescence.] *Pneumologie* 1996;**50**:544–8.

188. Toelle BG, Peat JK, Salome CM, Mellis CM, Bauman AE, Woolcock AJ. Evaluation of a community-based asthma management program in a population sample of schoolchildren. *Med J Aust* 1993;**158**:742–6.

189. Valery PC, Masters IB, Taylor B, Laifoo Y, O'Rourke PK, Chang AB. An education intervention for childhood asthma by Aboriginal and Torres Strait Islander health workers: a randomised controlled trial. *Med J Australia* 2010;**192**:574–9.

190. Van de Wiel NMH, Matthys W, Cohen-Kettenis P, van Engeland H. Application of the Utrecht Coping Power Program and care as usual to children with disruptive behavior disorders in outpatient clinics: A comparative study of cost and course of treatment. *Behav Ther* 2003;**34**:421–36. https://doi.org/10.1016/S0005-7894(03)80028-X

191. Van Der Veek SMC, Derkx BHF, Benninga MA, Boer F, De Haan E. Cognitive behavior therapy for pediatric functional abdominal pain: a randomized controlled trial. *Pediatrics* 2013;**132**:e1163–e72. https://doi.org/10.1542/peds.2013-0242

192. Velsor-Friedrich B, Militello LK, Richards MH, Harrison PR, Gross IM, Romero E, *et al.* Effects of coping-skills training in low-income urban African-American adolescents with asthma. *J Asthma* 2012;**49**:372–9. https://doi.org/10.3109/02770903.2012.660296

193. Walders N, Kercsmar C, Schluchter M, Redline S, Kirchner HL, Drotar D. An interdisciplinary intervention for undertreated pediatric asthma. *Chest* 2006;**129**:292–9. https://doi.org/10.1378/chest.129.2.292

194. Watson WT, Gillespie C, Thomas N, Filuk SE, McColm J, Piwniuk MP, *et al.* Small-group, interactive education and the effect on asthma control by children and their families. *CMAJ* 2009;**181**:257–63. https://doi.org/10.1503/cmaj.080947

195. Weisz JR, Southam-Gerow MA, Gordis EB, Connor-Smith JK, Chu BC, Langer DA, *et al.* Cognitive-behavioral therapy versus usual clinical care for youth depression: an initial test of transportability to community clinics and clinicians. *J Consult Clin Psych* 2009;**77**:383–96. https://doi.org/10.1037/a0013877

196. Willems DCM, Joore MA, Hendriks JJE, Wouters EFM, Severens JL. Cost-effectiveness of a nurse-led telemonitoring intervention based on peak expiratory flow measurements in asthmatics: results of a randomised controlled trial. *Cost Eff Resour Alloc* 2007;**5**:10. https://doi.org/10.1186/1478-7547-5-10

197. Willems DC, Joore MA, Hendriks JJ, van Duurling RA, Wouters EF, Severens JL. Process evaluation of a nurse-led telemonitoring programme for patients with asthma. *J Telemed Telecare* 2007;**13**:310–17. https://doi.org/10.1258/135763307781644898

198. Willems DC, Joore MA, Hendriks JJ, Nieman FH, Severens JL, Wouters EF. The effectiveness of nurse-led telemonitoring of asthma: results of a randomized controlled trial. *J Eval Clin Pract* 2008;**14**:600–9. https://doi.org/10.1111/j.1365-2753.2007.00936.x

199. Xu C, Jackson M, Scuffham PA, Wootton R, Simpson P, Whitty J, *et al.* A randomized controlled trial of an interactive voice response telephone system and specialist nurse support for childhood asthma management. *J Asthma* 2010;**47**:768–73. https://doi.org/10.3109/02770903.2010.493966

200. Young NL, Foster AM, Parkin PC, Reisman J, MacLusky I, Gold M, *et al.* Assessing the efficacy of a school-based asthma education program for children: a pilot study. *Can J Public Health* 2001;**92**:30–4.

201. Grimshaw J, McAuley LM, Bero LA, Grilli R, Oxman AD, Ramsay C, *et al.* Systematic reviews of the effectiveness of quality improvement strategies and programmes. *Qual Saf Health Care* 2003;**12**:298–303. https://doi.org/10.1136/qhc.12.4.298

202. Wilson IB, Cleary PD. Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes. *JAMA* 1995;**273**:59–65. https://doi.org/10.1001/jama.1995.03520250075037

203. Barr RD, Pai MK, Weitzman S, Feeny D, Furlong W, Rosenbaum P, *et al.* A multiattribute approach to health-status measurement and clinical management illustrated by an application to brain tumors in childhood. *Int J Oncol* 1994;**4**:639–48. https://doi.org/10.3892/ijo.4.3.639

204. Matza LS, Swensen AR, Flood EM, Secnik K, Leidy NK. Assessment of health-related quality of life in children: a review of conceptual, methodological, and regulatory issues. *Value Health* 2004;**7**:79–92. https://doi.org/10.1111/j.1524-4733.2004.71273.x

205. Eiser C, Morse R. Quality-of-life measures in chronic diseases of childhood. *Health Technol Assess* 2001;**5**(4). https://doi.org/10.3310/hta5040

206. Landgraf JM, Abetz LN. Measuring Health Outcomes in Pediatric Populations: Issues in Psychometrics and Application. In Spilker B, editor. *Quality of Life and Pharmacoeconomics in Clinical Trials*. Philadelphia, PA: Lippincott-Raven Publishers; 1996. pp. 793–802.

207. Eiser C, Mohay H, Morse R. The measurement of quality of life in young children. *Child Care Health Dev* 2000;**26**:401–14. https://doi.org/10.1046/j.1365-2214.2000.00154.x

208. Roland M, Abel G. Reducing emergency admissions: are we on the right track? *BMJ* 2012;**345**:e6017. https://doi.org/10.1136/bmj.e6017

209. Claxton K, Walker S, Palmer S, Sculpher M. *Appropriate Perspectives for Health Care Decisions. CHE Research Paper 54*. Centre of Health Economics, University of York; 2010. URL: www.york.ac.uk/che/pdf/rp54summary.pdf (accessed 11 April 2017).

210. Kirk S, Glendinning C, Callery P. Parent or nurse? The experience of being the parent of a technology-dependent child. *J Adv Nurs* 2005;**51**:456–64. https://doi.org/10.1111/j.1365-2648.2005.03522.x

211. Thorne SE, Paterson BL. Health care professional support for self-care management in chronic illness: insights from diabetes research. *Patient Educ Couns* 2001;**42**:81–90. https://doi.org/10.1016/S0738-3991(00)00095-1

212. Rogers A, Lee V, Kennedy A. Continuity and change? Exploring reactions to a guided self-management intervention in a randomised controlled trial for IBS with reference to prior experience of managing a long term condition. *Trials* 2007;**8**:6. https://doi.org/10.1186/1745-6215-8-6

213. Schmidt C. Mothers' perceptions of self-care in school-age children with diabetes. *MCN Am J Matern Child Nurs* 2003;**28**:362–70. https://doi.org/10.1097/00005721-200311000-00007

214. Buford TA. Transfer of asthma management responsibility from parents to their school-age children. *J Pediatr Nurs* 2004;**19**:3–12. https://doi.org/10.1016/j.pedn.2003.09.002

215. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M, *et al.* Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ* 2008;**337**:a1655. https://doi.org/10.1136/bmj.a1655

216. Hewitt CE, Gilbody SM, Brealey S, Paulden M, Palmer S, Mann R, *et al.* Methods to identify postnatal depression in primary care: an integrated evidence synthesis and value of information analysis. *Health Technol Assess* 2009;**13**(36). https://doi.org/10.3310/hta13360

217. Juniper EF, Guyatt GH, Feeny DH, Ferrie PJ, Griffith LE, Townsend M. Measuring quality of life in children with asthma. *Qual Life Res* 1996;**5**:35–46. https://doi.org/10.1007/BF00435967

218. Bukstein DA, McGrath MM, Buchner DA, Landgraf J, Goss TF. Evaluation of a short form for measuring health-related quality of life among pediatric asthma patients. *J Allergy Clin Immunol* 2000;**105**:245–51. https://doi.org/10.1016/S0091-6749(00)90072-1

Appendix 1 Search strategies

Cumulative Index to Nursing and Allied Health Literature Plus database (via EBSCO*host*)

Date searched: 19 March 2015.

Date range searched: inception to 13 March 2015.

Records retrieved: 5330.

Search strategy

#	Query	Results
S162	S160 NOT S161	5330
S161	PT editorial or comment or letter	394,243
S160	S151 OR S159	5362
S159	S152 OR S153 OR S154 OR S155 OR S156 OR S157 OR S158	208
S158	TI "friends program*" OR AB "friends program*"	8
S157	TI "Triple P" OR AB "Triple P"	97
S156	TI "Incredible Years" OR AB "Incredible Years"	65
S155	TI "problem solving for life" OR AB "problem solving for life"	3
S154	TI "Timid to Tiger" OR AB "Timid to Tiger"	2
S153	TI "Sweet talk" OR AB "Sweet talk"	27
S152	TI "Cool Kids" OR AB "Cool Kids"	11
S151	S91 AND S116 AND S149 AND S150	5162
S150	S20 OR S84	874,894
S149	S117 OR S118 OR S119 OR S120 OR S121 OR S122 OR S123 OR S124 OR S125 OR S126 OR S127 OR S128 OR S129 OR S130 OR S131 OR S132 OR S133 OR S134 OR S135 OR S136 OR S137 OR S138 OR S139 OR S140 OR S141 OR S142 OR S143 OR S144 OR S145 OR S146 OR S147 OR S148	297,682
S148	TI (qaly* or "quality adjusted life" or "quality of life" or "life quality") OR AB (qaly* or "quality adjusted life" or "quality of life" or "life quality")	53,176
S147	(MH "Quality-Adjusted Life Years")	2146
S146	TI (hrql or hrqol or h-qol or hql or hqol) OR AB (hrql or hrqol or h-qol or hql or hqol)	2927
S145	TI (hospitalisation* or hospitalization* or rehospitalisation* or rehospitalization* or re-hospitalisation* or re-hospitalization*) OR AB (hospitalisation* or hospitalization* or rehospitalisation* or rehospitalization* or re-hospitalisation* or re-hospitalization*)	22,851
S144	TI (consultation* N2 (time or length)) OR AB (consultation* N2 (time or length))	474
S143	TI ((clinic or surgery or hospital or "accident and emergency") N2 (work-flow or "work flow")) OR AB ((clinic or surgery or hospital or "accident and emergency") N2 (work-flow or "work flow"))	6
S142	TI ((uptake or access) W1 (service* or care or intervention*)) OR AB ((uptake or access) W1 (service* or care or intervention*))	4262
S141	TI (GP N1 (access or uptake or visit* or contact* or attendance* or admission* or episode*)) OR AB (GP N1 (access or uptake or visit* or contact* or attendance* or admission* or episode*))	359
S140	TI (surgery N1 (visit* or contact* or attendance* or admission* or episode*)) OR AB (surgery N1 (visit* or contact* or attendance* or admission* or episode*))	240

#	Query	Results
S139	TI ("primary care" N1 (visit* or contact* or attendance* or admission* or episode*)) OR AB ("primary care" N1 (visit* or contact* or attendance* or admission* or episode*))	796
S138	TI (number N2 (nights or days)) OR AB (number N2 (nights or days))	2300
S137	TI ((patient* or inpatient* or in-patient*) N1 (cost* or stay*)) OR AB ((patient* or inpatient* or in-patient*) N1 (cost* or stay*))	5482
S136	TI "hospital day*" OR AB "hospital day*"	827
S135	TI time N2 discharg* OR AB time N2 discharg*	1206
S134	TI "hospital cost*" OR AB "hospital cost*"	1254
S133	TI (hospital N1 (access* or uptake or visit* or attendance* or admission* or admit* or episode*)) OR AB (hospital N1 (access* or uptake or visit* or attendance* or admission* or admit* or episode*))	9825
S132	TI duration N2 stay OR AB duration N2 stay	840
S131	TI length N2 stay OR AB length N2 stay	11,520
S130	(MH "Health Resource Utilization") OR (MH "Health Resource Allocation")	18,081
S129	(MH "Readmission")	5960
S128	(MH "Hospitalization") OR (MH "Length of Stay") OR (MH "Patient Admission")	48,675
S127	TI budget* OR AB budget*	6666
S126	TI (value N1 money) OR AB (value N1 money)	447
S125	TI (expenditure* not energy) OR AB (expenditure* not energy)	5192
S124	TI (econom* or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic*) OR AB (econom* or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic*)	112,768
S123	(MH "Health Care Costs+")	34,309
S122	(MH "Economic Aspects of Illness")	5807
S121	(MH "Economics, Dental")	96
S120	(MH "Economics, Pharmaceutical")	1694
S119	(MH "Economic Value of Life")	488
S118	(MH "Costs and Cost Analysis+")	75,720
S117	(MH "Economics")	9773
S116	S92 OR S93 OR S94 OR S95 OR S96 OR S97 OR S98 OR S99 OR S100 OR S101 OR S102 OR S103 OR S104 OR S105 OR S106 OR S107 OR S108 OR S109 OR S110 OR S111 OR S112 OR S113 OR S114 OR S115	398,552
S115	(MH "Mental Health")	17,397
S114	TI "school refusal" OR AB "school refusal"	49
S113	(MH "Panic Disorder")	1597
S112	(MH "Phobic Disorders+")	3618
S111	(MH "Bipolar Disorder+")	7408
S110	(MH "Schizophrenia+")	16,421
S109	(MH "Eating Disorders+")	11,947
S108	(MH "Psychotic Disorders+")	77,469
S107	(MH "Stress Disorders, Post-Traumatic+")	13,346
S106	(MH "Obsessive-Compulsive Disorder+")	3756
S105	(MH "Affective Disorders+")	71,774

#	Query	Results
S104	(MH "Social Behavior Disorders+")	61,606
S103	(MH "Epilepsy+")	10,859
S102	(MH "Self-Injurious Behavior")	2371
S101	(MH "Injuries, Self-Inflicted")	1620
S100	(MH "Depression+")	68,027
S99	(MH "Anxiety+")	24,635
S98	(MH "Hyperkinesis")	313
S97	(MH "Child Behavior Disorders")	6047
S96	(MH "Attention Deficit Hyperactivity Disorder")	10,196
S95	(MH "Asthma+")	24,073
S94	TX mucoviscidosis	7
S93	(MH "Cystic Fibrosis")	5069
S92	(MH "Diabetes Mellitus+")	100,829
S91	S85 OR S86 OR S87 OR S88 OR S89 OR S90	809,141
S90	TI (parent* or mother* or father* or caregiver* or carer* or guardian* or advocate* or family) OR AB (parent* or mother* or father* or caregiver* or carer* or guardian* or advocate* or family)	206,010
S89	(MH "Caregivers")	20,984
S88	(MH "Parents+")	56,978
S87	TI (child or children or schoolchild* or baby or babies or infant or infants or toddler* or teen* or teenager* or adolescen* or "young person*" or "young people" or youth or youngster* or juvenile* or paediatric or pediatric) OR AB (child or children or schoolchild* or baby or babies or infant or infants or toddler* or teen* or teenager* or adolescen* or "young person*" or "young people" or youth or youngster* or juvenile* or paediatric or pediatric)	362,291
S86	(MH "Adolescence+")	327,147
S85	(MH "Child+")	429,276
S84	S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55 OR S56 OR S57 OR S58 OR S59 OR S60 OR S61 OR S62 OR S63 OR S64 OR S65 OR S66 OR S67 OR S68 OR S69 OR S70 OR S71 OR S72 OR S73 OR S74 OR S75 OR S76 OR S77 OR S78 OR S79 OR S80 OR S81 OR S82 OR S83	805,043
S83	TI "text messag*" OR AB "text messag*"	694
S82	(MH "Reminder Systems")	1795
S81	(MH "Text Messaging")	514
S80	(MH "Wireless Communications")	9320
S79	(MH "Telephone")	12,992
S78	(MH "Patient Access to Records")	457
S77	(MH "Mindfulness")	566
S76	(MH "Communication+")	168,936
S75	(MH "Adaptation, Psychological")	21,027
S74	(MH "Coping")	20,654
S73	TI ("skills training" or "coping skill*" or empower*) OR AB ("skills training" or "coping skill*" or empower*)	13,751
S72	(MH "Problem Solving")	8019
S71	TI psychoeducat* OR AB psychoeducat*	1274

APPENDIX 1

#	Query	Results
S70	(MH "Psychoeducation")	1836
S69	(MH "Psychotherapy, Group")	4012
S68	(MH "Psychotherapy, Brief")	753
S67	TI ((behavior* or behaviour*) N1 (manag* or modif*)) OR AB ((behavior* or behaviour*) N1 (manag* or modif*))	3662
S66	(MH "Behavior Modification")	1651
S65	(MH "Behavior Therapy")	7714
S64	TI "parent* training" OR AB "parent* training"	455
S63	(MH "Parenting")	10,162
S62	(MH "Social Media")	2963
S61	(MH "Blogs")	2147
S60	(MH "Internet")	33,921
S59	(MH "Bibliotherapy")	308
S58	TI ("educational material*" or leaflet* or booklet* or toolkit*) OR AB ("educational material*" or leaflet* or booklet* or toolkit*)	5141
S57	(MH "Pamphlets")	2455
S56	(MH "Teaching Materials")	9621
S55	TI (CBT or "cognitive therap*" or "cognitive behav*") OR AB (CBT or "cognitive therap*" or "cognitive behav*")	7897
S54	(MH "Cognitive Therapy")	12,009
S53	(MH "Motivational Interviewing")	1517
S52	(MH "Exercise+")	67,755
S51	(MH "Diet+")	71,326
S50	TI ("goal set*" or "individual goal*") OR AB ("goal set*" or "individual goal*")	1364
S49	TI (decision* N2 (shared or support* or aid or aids or making)) OR AB (decision* N2 (shared or support* or aid or aids or making))	31,517
S48	(MH "Goal-Setting")	3952
S47	(MH "Decision Making")	29,422
S46	TI ("contingent payment*" or "deposit contract*") OR AB ("contingent payment*" or "deposit contract*")	2
S45	TI (((financial or monetary or money) N2 (incentive* or competition* or contest* or lotter* or reward* or prize*))) OR AB (((financial or monetary or money) N2 (incentive* or competition* or contest* or lotter* or reward* or prize*)))	1528
S44	(MH "Consumer Health Information")	9291
S43	TI nurse N2 educator* OR AB nurse N2 educator*	3624
S42	TI (("consumer health" or patient) N1 information) OR AB (("consumer health" or patient) N1 information)	3409
S41	TI (patient N2 (educat* or advice or advis* or instruct* or instruct* or train* or coach*)) OR AB (patient N2 (educat* or advice or advis* or instruct* or instruct* or train* or coach*))	11,053
S40	(MH "Patient Education")	49,243
S39	TI (involv* or participat* or collaborat*) OR AB (involv* or participat* or collaborat*)	236,994
S38	(MH "Consumer Participation")	12,803

#	Query	Results
S37	TI ("case manag*" or "action plan*" or "care plan*" or "care manag*" or "management plan*" or "management program*" or "care program*" or "goal setting" or "individual goal*") OR AB ("case manag*" or "action plan*" or "care plan*" or "care manag*" or "management plan*" or "management program*" or "care program*" or "goal setting" or "individual goal*")	27,900
S36	(MH "Case Management")	13,495
S35	TI ((telephon* or remote or phone) N2 (follow* or support* or consult* or advice or advis* or intervention* or instruct* or assist* or educate or education or information or monitor*)) OR AB ((telephon* or remote or phone) N2 (follow* or support* or consult* or advice or advis* or intervention* or instruct* or assist* or educate or education or information or monitor*))	4687
S34	(MH "Remote Consultation")	1196
S33	TI (telemedicine or telecare or telenursing or telemonitor* or telehealth or ehealth) OR AB (telemedicine or telecare or telenursing or telemonitor* or telehealth or ehealth)	4913
S32	(MH "Telehealth")	3643
S31	(MH "Telenursing")	1624
S30	(MH "Telemedicine")	5638
S29	TI "health trainer*" OR AB "health trainer*"	41
S28	TI (befriend* or coach* or mentor* or buddy or buddies) OR AB (befriend* or coach* or mentor* or buddy or buddies)	12,215
S27	TI ("expert patient*" or "virtual communit*" or "online communit*") OR AB ("expert patient*" or "virtual communit*" or "online communit*")	550
S26	TI ((mutual or telephone) W1 support) OR AB ((mutual or telephone) W1 support)	592
S25	TI (peer W1 (support* or advice or advis* or monitor* or intervention* or train* or instruct* or consult* or assist* or educat* or information)) OR AB (peer W1 (support* or advice or advis* or monitor* or intervention* or train* or instruct* or consult* or assist* or educat* or information))	2726
S24	TI (group W1 (support* or advice or advis* or monitor* or intervention* or train* or instruct* or consult* or assist* or educat* or information)) OR AB (group W1 (support* or advice or advis* or monitor* or intervention* or train* or instruct* or consult* or assist* or educat* or information))	4948
S23	TI "social support*" OR AB "social support*"	13,267
S22	(MH "Support Groups")	7557
S21	(MH "Support, Psychosocial")	44,816
S20	S1 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19	123,653
S19	TI recovery OR AB recovery	35,013
S18	TI (collaborat* N1 (care or manag*)) OR AB (collaborat* N1 (care or manag*))	1811
S17	TI (self-treat* or selftreat* or self-cure* or selfcure* or self-curing or selfcuring) OR AB (self-treat* or selftreat* or self-cure* or selfcure* or self-curing or selfcuring)	442
S16	TI (self-medicat* or selfmedicat* or self-remed* or selfremed*) OR AB (self-medicat* or selfmedicat* or self-remed* or selfremed*)	751
S15	(MH "Self Medication")	1270
S14	TI self-efficacy OR AB self-efficacy	9551
S13	(MH "Self-Efficacy")	12,167
S12	TI self-initiat* OR AB self-initiat*	237
S11	(MH "Blood Glucose Self-Monitoring")	2510
S10	TI (self-diagnos* or selfdiagnos* or self-assess* or selfassess*) OR AB (self-diagnos* or selfdiagnos* or self-assess* or selfassess*)	4065
S9	TI (self-help* or selfhelp*) OR AB (self-help* or selfhelp*)	2355

#	Query	Results
S8	TI (self-monitor* or selfmonitor* or self-report* or selfreport*) OR AB (self-monitor* or selfmonitor* or self-report* or selfreport*)	34,036
S7	TI (self-manag* or selfmanag*) OR AB (self-manag* or selfmanag*)	6324
S6	TI (self-care* or selfcaring or selfcare* or selfcaring) OR AB (self-care* or selfcaring or selfcare* or selfcaring)	8332
S5	(MH "Self Care")	23,936
S4	S2 NOT S3	1589
S3	TI (self-administer* N2 (questionnaire* or survey* or interview*)) OR AB (self-administer* N2 (questionnaire* or survey* or interview*))	4926
S2	TI self-administer* OR AB self-administer*	6515
S1	(MH "Self Administration+")	4246

The Cochrane Library (via Wiley Online Library)

Date searched: 18 March 2015.

The same search strategy was used across all five databases:

1. CDSR : issue 3 of 12, March 2015
2. DARE: issue 1 of 4, January 2015
3. CENTRAL: issue 2 of 12, February 2015
4. HTA database: issue 1 of 4, January 2015
5. NHS EED: issue 1 of 4, January 2015.

Records retrieved:

1. all results: 1894
2. CDSR: 124
3. DARE: 40
4. CENTRAL: 1596
5. HTA database: 8
6. NHS EED: 126.

Search strategy

#1 MeSH descriptor: [Self Administration] this term only (653)

#2 self next administer*:ti,ab,kw (2287)

#3 (self next administer* near/2 (questionnaire* or survey* or interview*)):ti,ab,kw (792)

#4 #2 not #3 (1495)

#5 MeSH descriptor: [Self Care] this term only (2833)

#6 (self next care* or selfcaring or selfcare* or selfcaring):ti,ab,kw (4256)

#7 (self next manag* or selfmanag*):ti,ab,kw (2420)

#8 (self next monitor* or selfmonitor* or self report* or selfreport*):ti,ab,kw (18,030)

#9 (self next help* or selfhelp*):ti,ab,kw (1870)

#10 (self next diagnos* or selfdiagnos* or self next assess* or selfassess*):ti,ab,kw (2006)

#11 MeSH descriptor: [Blood Glucose Self-Monitoring] this term only (495)

#12 self next initiat*:ti,ab,kw (79)

#13 MeSH descriptor: [Self Efficacy] this term only (1599)

#14 self next efficacy:ti,ab,kw (3692)

#15 MeSH descriptor: [Self Medication] this term only (81)

#16 (self next medicat* or selfmedicat* or self next remed* or selfremed*):ti,ab,kw (247)

#17 (self next treat* or selftreat* or self next cure* or selfcure* or self next curing or selfcuring):ti,ab,kw (218)

#18 (collaborat* next (care or manag*)):ti,ab,kw (366)

#19 recovery:ti,ab,kw (25,073)

#20 #1 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 (52,340)

#21 MeSH descriptor: [Social Support] this term only (2441)

#22 social next support*:ti,ab,kw (3863)

#23 (group next (support* or advice or advis* or monitor* or intervention* or train* or instruct* or consult* or assist* or educat* or information)):ti,ab,kw (2670)

#24 (peer next (support* or advice or advis* or monitor* or intervention* or train* or instruct* or consult* or assist* or educat* or information)):ti,ab,kw (515)

#25 ((mutual or telephone) next support):ti,ab,kw (294)

#26 (expert next patient* or virtual next communit* or online next communit*):ti,ab,kw (45)

#27 (befriend* or coach* or mentor* or buddy or buddies):ti,ab,kw (1348)

#28 health next trainer*:ti,ab,kw (5)

#29 MeSH descriptor: [Telemedicine] this term only (1013)

#30 (telemedicine or telecare or telenursing or telemonitor* or telehealth or ehealth):ti,ab,kw (1776)

#31 MeSH descriptor: [Remote Consultation] this term only (333)

#32 ((telephon* or remote or phone) near/2 (follow* or support* or consult* or advice or advis* or intervention* or instruct* or assist* or educate or education or information or monitor*)):ti,ab,kw (2831)

#33 MeSH descriptor: [Case Management] this term only (652)

#34 (case next manag* or action next plan* or care next plan* or care next manag* or management next plan* or management next program* or care next program* or goal next setting or individual next goal*):ti,ab,kw (6445)

#35 MeSH descriptor: [Patient Participation] this term only (890)

#36 (involv* or participat* or collaborat*):ti,ab,kw (72,418)

#37 MeSH descriptor: [Patient Education as Topic] this term only (6657)

#38 patient next education:ti,ab,kw (8086)

#39 (patient near/2 (educat* or advice or advis* or instruct* or train* or coach*)):ti,ab,kw (8784)

#40 ((consumer next health or patient) next information):ti,ab,kw (553)

#41 (nurse near/2 educator*):ti,ab,kw (73)

#42 ((financial or monetary or money) near/2 (incentive* or competition* or contest* or lotter* or reward* or prize*)):ti,ab,kw (513)

#43 (contingent next payment* or deposit next contract*):ti,ab,kw (17)

#44 MeSH descriptor: [Decision Making] this term only (1692)

#45 (decision* near/2 (shared or support* or aid or aids or making)):ti,ab,kw (7150)

#46 (goal next set* or individual next goal*):ti,ab,kw (446)

#47 MeSH descriptor: [Diet] explode all trees (12,385)

#48 MeSH descriptor: [Exercise] explode all trees (14,181)

#49 MeSH descriptor: [Motivational Interviewing] this term only (136)

#50 MeSH descriptor: [Cognitive Therapy] this term only (5146)

#51 (CBT or cognitive next therap* or cognitive next behav*):ti,ab,kw (9693)

#52 MeSH descriptor: [Teaching Materials] this term only (383)

#53 MeSH descriptor: [Pamphlets] this term only (623)

#54 (educational next material* or leaflet* or booklet* or toolkit*):ti,ab,kw (1977)

#55 MeSH descriptor: [Bibliotherapy] this term only (105)

#56 MeSH descriptor: [Internet] explode all trees (1900)

#57 MeSH descriptor: [Parenting] this term only (669)

#58 parent* next training:ti,ab,kw (382)

#59 MeSH descriptor: [Behavior Therapy] this term only (3633)

#60 ((behavior* or behaviour*) next (manag* or modif*)):ti,ab,kw (950)

#61 MeSH descriptor: [Psychotherapy, Brief] this term only (708)

#62 MeSH descriptor: [Psychotherapy, Group] this term only (1533)

#63 psychoeducat*:ti,ab,kw (1071)

#64 MeSH descriptor: [Problem Solving] this term only (1209)

#65 (skills next training or coping next skill* or empower*):ti,ab,kw (2354)

#66 MeSH descriptor: [Adaptation, Psychological] this term only (3112)

#67 MeSH descriptor: [Communication] explode all trees (9893)

#68 MeSH descriptor: [Mindfulness] this term only (32)

#69 MeSH descriptor: [Patient Access to Records] this term only (17)

#70 MeSH descriptor: [Cell Phones] this term only (323)

#71 MeSH descriptor: [Telephone] this term only (1409)

#72 MeSH descriptor: [Text Messaging] this term only (144)

#73 MeSH descriptor: [Reminder Systems] this term only (618)

#74 text next messag*:ti,ab,kw (427)

#75 {or #21-#74} (136,490)

#76 MeSH descriptor: [Child] explode all trees (151)

#77 MeSH descriptor: [Adolescent] this term only (77,091)

#78 (child or children or schoolchild* or baby or babies or infant or infants or toddler* or teen* or teenager* or adolescen* or young next person* or young next people or youth or youngster* or juvenile* or paediatric or pediatric):ti,ab,kw (163,314)

#79 MeSH descriptor: [Parents] explode all trees (2723)

#80 MeSH descriptor: [Caregivers] this term only (1265)

#81 (parent* or mother* or father* or caregiver* or carer* or guardian* or advocate* or family):ti,ab,kw (40,218)

#82 #76 or #77 or #78 or #79 or #80 or #81 (182,717)

#83 MeSH descriptor: [Diabetes Mellitus] explode all trees (16,726)

#84 MeSH descriptor: [Cystic Fibrosis] this term only (1102)

#85 mucoviscidosis:ti,ab,kw (33)

#86 MeSH descriptor: [Asthma] explode all trees (9404)

#87 MeSH descriptor: [Attention Deficit and Disruptive Behavior Disorders] explode all trees (1865)

#88 MeSH descriptor: [Hyperkinesis] this term only (168)

#89 MeSH descriptor: [Anxiety] explode all trees (5226)

#90 MeSH descriptor: [Depression] this term only (5541)

#91 MeSH descriptor: [Depressive Disorder] this term only (4754)

#92 MeSH descriptor: [Self Mutilation] this term only (25)

#93 MeSH descriptor: [Self-Injurious Behavior] this term only (205)

#94 MeSH descriptor: [Epilepsy] explode all trees (2311)

#95 MeSH descriptor: [Conduct Disorder] explode all trees (179)

#96 MeSH descriptor: [Mood Disorders] explode all trees (9310)

#97 MeSH descriptor: [Obsessive-Compulsive Disorder] explode all trees (662)

#98 MeSH descriptor: [Stress Disorders, Post-Traumatic] this term only (972)

#99 MeSH descriptor: [Psychotic Disorders] explode all trees (1562)

#100 MeSH descriptor: [Eating Disorders] explode all trees (838)

#101 MeSH descriptor: [Schizophrenia] explode all trees (4966)

#102 MeSH descriptor: [Bipolar Disorder] explode all trees (1601)

#103 MeSH descriptor: [Phobic Disorders] this term only (847)

#104 MeSH descriptor: [Panic Disorder] this term only (758)

#105 school next refusal:ti,ab,kw (14)

#106 MeSH descriptor: [Mental Health] this term only (689)

#107 {or #83-#106} (57,988)

#108 MeSH descriptor: [Economics] this term only (58)

#109 MeSH descriptor: [Costs and Cost Analysis] explode all trees (23,270)

#110 MeSH descriptor: [Value of Life] this term only (144)

#111 MeSH descriptor: [Economics, Hospital] explode all trees (1655)

#112 MeSH descriptor: [Economics, Medical] this term only (38)

#113 MeSH descriptor: [Economics, Nursing] this term only (17)

#114 MeSH descriptor: [Economics, Pharmaceutical] this term only (236)

#115 MeSH descriptor: [Economics, Dental] this term only (3)

#116 (econom* or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic*): ti,ab,kw (48,142)

#117 (expenditure* not energy):ti,ab (762)

#118 (value next money):ti,ab,kw (2)

#119 budget*:ti,ab,kw (418)

#120 MeSH descriptor: [Hospitalization] this term only (4574)

#121 MeSH descriptor: [Length of Stay] this term only (6734)

#122 MeSH descriptor: [Patient Admission] this term only (578)

#123 MeSH descriptor: [Patient Readmission] this term only (811)

#124 MeSH descriptor: [Health Resources] this term only (513)

#125 (length near/2 stay):ti,ab,kw (10,176)

#126 (duration near/2 stay):ti,ab,kw (372)

#127 (hospital next (access* or uptake or visit* or attendance* or admission* or admit* or episode*)):ti, ab,kw (3243)

#128 hospital next cost*:ti,ab,kw (2548)

#129 (time near/2 discharg*):ti,ab,kw (896)

#130 hospital next day*:ti,ab,kw (508)

#131 ((patient* or inpatient* or in-patient*) next (cost* or stay*)):ti,ab,kw (772)

#132 (number near/2 (nights or days)):ti,ab,kw (1889)

#133 (primary next care next (visit* or contact* or attendance* or admission* or episode*)):ti,ab,kw (139)

#134 (surgery next (visit* or contact* or attendance* or admission* or episode*)):ti,ab,kw (36)

#135 (GP next (access or uptake or visit* or contact* or attendance* or admission* or episode*)):ti,ab,kw (65)

#136 ((uptake or access) next (service* or care or intervention*)):ti,ab,kw (39)

#137 ((clinic or surgery or hospital or "accident and emergency") near/2 (work-flow or work next flow)):ti,ab,kw (2)

#138 (consultation* near/2 (time or length)):ti,ab,kw (116)

#139 (hospitalisation* or hospitalization* or rehospitalisation* or rehospitalization* or re-hospitalisation* or re-hospitalization*):ti,ab,kw (15,517)

#140 (hrql or hrqol or "h qol" or h-qol or hql or hqol):ti,ab,kw (1887)

#141 MeSH descriptor: [Quality-Adjusted Life Years] this term only (3773)

#142 (qaly* or "quality adjusted life" or "quality of life" or "life quality"):ti,ab,kw (37,642)

#143 {or #108-#142} (97,676)

#144 #20 or #75 (169,797)

#145 #144 and #82 and #107 and #143 (1739)

#146 "Cool Kids":ti,ab,kw (3)

#147 "Sweet talk":ti,ab,kw (2)

#148 "Timid to Tiger":ti,ab,kw (0)

#149 "problem solving for life":ti,ab,kw (2)

#150 "Incredible Years":ti,ab,kw (67)

#151 "Triple P":ti,ab,kw (77)

#152 friends next program*:ti,ab,kw (12)

#153 #146 or #147 or #148 or #149 or #150 or #151 or #152 (162)

#154 #145 or #153 (1894)

EMBASE (via OvidSP)

Date searched: 18 March 2015.

Date range searched: 1974 to 17 March 2015.

Records retrieved: 17,780.

Search strategy

1. self administer*.ti,ab. (30,354)
2. (self administer$ adj2 (questionnaire$ or survey$ or interview$)).ti,ab. (18,534)
3. 1 not 2 (11,820)
4. self care/ (33,623)
5. (self care$ or selfcaring or selfcare$ or selfcaring).ti,ab. (14,723)
6. (self manag$ or selfmanag$).ti,ab. (13,745)
7. (self monitor$ or selfmonitor$ or self report$ or selfreport$).ti,ab. (120,139)
8. (self help$ or selfhelp$).ti,ab. (6234)
9. (self diagnos$ or selfdiagnos$ or self assess$ or selfassess$).ti,ab. (14,481)
10. blood glucose self-monitoring/ (9642)
11. self initiat$.ti,ab. (1171)
12. self concept/ (65,378)
13. self efficacy.ti,ab. (17,042)
14. Drug self administration/ (8067)
15. (self medicat$ or selfmedicat$ or self remed$ or selfremed$).ti,ab. (4434)
16. (self treat$ or selftreat$ or self cure$ or selfcure$ or self curing or selfcuring).ti,ab. (2748)
17. (collaborat$ adj (care or manag$)).ti,ab. (1749)
18. recovery.ti,ab. (399,435)
19. 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 (666,873)
20. social support/ (60,564)
21. social support$.ti,ab. (29,089)
22. (group adj (support$ or advice or advis$ or monitor$ or intervention$ or train$ or instruct$ or consult$ or assist$ or educat$ or information)).ti,ab. (7925)
23. (peer adj (support$ or advice or advis$ or monitor$ or intervention$ or train$ or instruct$ or consult$ or assist$ or educat$ or information)).ti,ab. (4169)
24. ((mutual or telephone) adj support).ti,ab. (1115)
25. (expert patient$ or virtual communit$ or online communit$).ti,ab. (914)
26. (befriend$ or coach$ or mentor$ or buddy or buddies).ti,ab. (20,445)
27. health trainer$.ti,ab. (65)
28. telemedicine/ (12,152)
29. (telemedicine or telecare or telenursing or telemonitor$ or telehealth or ehealth).ti,ab. (11,512)
30. teleconsultation/ (6439)
31. ((telephon$ or remote or phone) adj2 (follow$ or support$ or consult$ or advice or advis$ or intervention$ or instruct$ or assist$ or educate or education or information or monitor$)).ti,ab. (13,807)
32. case management/ (8130)
33. (case manag$ or action plan$ or care plan$ or care manag$ or management plan$ or management program$ or care program$ or goal setting or individual goal$).ti,ab. (66,439)
34. Patient Participation/ (17,929)
35. (involv$ or participat$ or collaborat$).ti,ab. (2,443,918)
36. patient education/ (88,903)
37. patient education.ti,ab. (16,471)

38. (patient adj2 (educat$ or advice or advis$ or instruct$ or instruct$ or train$ or coach$)).ti,ab. (24,060)
39. ((consumer health or patient) adj information).ti,ab. (7877)
40. (nurse adj2 educator$).ti,ab. (2777)
41. ((financial or monetary or money) adj2 (incentive$ or competition$ or contest$ or lotter$ or reward$ or prize$)).ti,ab. (5470)
42. (contingent payment$ or deposit contract$).ti,ab. (33)
43. decision making/ (149,178)
44. (decision$ adj2 (shared or support$ or aid or aids or making)).ti,ab. (112,354)
45. (goal set$ or individual goal$).ti,ab. (3176)
46. exp Diet/ or exp exercise/ (433,362)
47. Motivational Interviewing/ (1362)
48. Cognitive therapy/ (35,839)
49. (CBT or cognitive therap$ or cognitive behav$).ti,ab. (28,386)
50. Teaching/ or Publication/ (194,835)
51. (educational material$ or leaflet$ or booklet$ or toolkit$).ti,ab. (31,734)
52. Bibliotherapy/ (68)
53. Internet/ or Social Media/ (80,342)
54. exp Child Parent Relations/ (68,127)
55. (parenting or parent$ training).ti,ab. (13,012)
56. exp Behavior Therapy/ (37,925)
57. ((behavior$ or behaviour$) adj (manag$ or modif$)).ti,ab. (6548)
58. exp Psychotherapy/ (195,095)
59. Group therapy/ (18,204)
60. psychoeducat$.ti,ab. (4261)
61. Problem Solving/ (27,244)
62. (skills training or coping skill$ or empower$).ti,ab. (25,022)
63. Adaptative Behavior/ (0)
64. exp interpersonal communication/ (417,154)
65. Mindfulness/ (1015)
66. exp Patient Right/ (91,293)
67. mobile phone/ or telephone/ or Text Messaging/ or Reminder System/ (37,748)
68. text messag$.ti,ab. (1632)
69. or/20-68 (4,059,777)
70. exp Child/ (2,160,034)
71. exp juvenile/ (2,820,035)
72. (child or children or schoolchild$ or baby or babies or infant or infants or toddler$ or teen$ or teenager$ or adolescen$ or young person$ or young people or youth or youngster$ or juvenile$ or paediatric or pediatric).ti,ab. (1,761,362)
73. exp Parent/ (168,626)
74. Caregiver/ (43,942)
75. (parent$ or mother$ or father$ or caregiver$ or carer$ or guardian$ or advocate$ or family).ti,ab. (1,237,658)
76. 70 or 71 or 72 or 73 or 74 or 75 (4,140,594)
77. exp Diabetes Mellitus/ (642,426)
78. Cystic Fibrosis/ (50,945)
79. mucoviscidosis.mp. (1548)
80. exp Asthma/ (196,806)
81. Attention Deficit Disorder/ (39,064)
82. Hyperkinesia/ (4305)
83. exp Anxiety/ (129,925)
84. Depression/ (260,270)

85. Automutilation/ (11,299)
86. exp Epilepsy/ (181,678)
87. exp Conduct Disorder/ (4717)
88. exp Mood Disorders/ (361,339)
89. exp Obsessive-Compulsive Disorder/ (29,047)
90. Posttraumatic Stress Disorder/ (37,336)
91. exp Psychosis/ (227,323)
92. exp Eating Disorder/ (37,814)
93. exp Schizophrenia/ (148,365)
94. exp Bipolar Disorder/ (42,348)
95. exp Phobia/ (22,859)
96. Panic/ (18,214)
97. school refusal.ti,ab. (310)
98. exp Mental Health/ (90,904)
99. 77 or 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 (1,802,468)
100. exp economics/ (222,944)
101. exp Cost/ (265,768)
102. Health care planning/ (80,549)
103. (econom$ or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic$).ti,ab. (653,899)
104. (expenditure$ not energy).tw. (25,636)
105. (value adj money).tw. (6)
106. budget$.tw. (25,819)
107. hospitalization/ or "length of stay"/ or patient admission/ or patient readmission/ (401,452)
108. ((healthcare or health) adj resource$).ti,ab. (8383)
109. (length adj2 stay).ti,ab. (50,442)
110. (duration adj2 stay).ti,ab. (3162)
111. (hospital adj (access$ or uptake or visit$ or attendance$ or admission$ or admit$ or episode$)).ti,ab. (39,882)
112. hospital cost$.ti,ab. (7701)
113. (time adj2 discharg$).ti,ab. (6339)
114. hospital day$.ti,ab. (6826)
115. ((patient$ or inpatient$ or in-patient$) adj (cost$ or stay$)).ti,ab. (8915)
116. (number adj2 (nights or days)).ti,ab. (12,521)
117. (primary care adj (visit$ or contact$ or attendance$ or admission$ or episode$)).ti,ab. (1236)
118. (surgery adj (visit$ or contact$ or attendance$ or admission$ or episode$)).ti,ab. (342)
119. (GP adj (access or uptake or visit$ or contact$ or attendance$ or admission$ or episode$)).ti,ab. (614)
120. ((uptake or access) adj (service$ or care or intervention$)).ti,ab. (1011)
121. ((clinic or surgery or hospital or "accident and emergency") adj2 (work-flow or work flow)).ti,ab. (13)
122. (consultation$ adj2 (time or length)).ti,ab. (1466)
123. (hospitalisation$ or hospitalization$ or rehospitalisation$ or rehospitalization$ or re-hospitalisation$ or re-hospitalization$).ti,ab. (152,093)
124. (hrql or hrqol or h qol or hql or hqol).ti,ab. (16,145)
125. quality adjusted life year/ (13,443)
126. (qaly$ or quality adjusted life or quality of life or life quality).tw. (242,535)
127. 100 or 101 or 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114 or 115 or 116 or 117 or 118 or 119 or 120 or 121 or 122 or 123 or 124 or 125 or 126 (1,622,052)
128. 19 or 69 (4,503,231)
129. 128 and 76 and 99 and 127 (21,601)

130. Cool Kids.ti,ab. (10)
131. Sweet talk.ti,ab. (18)
132. Timid to Tiger.ti,ab. (0)
133. "problem solving for life".ti,ab. (11)
134. Incredible Years.ti,ab. (109)
135. Triple P.ti,ab. (171)
136. friends program$.ti,ab. (17)
137. 130 or 131 or 132 or 133 or 134 or 135 or 136 (327)
138. 129 or 137 (21,901)
139. (editorial or comment or letter).pt. (1,340,488)
140. 138 not 139 (21,728)
141. limit 140 to embase (17,780)

IDEAS database of Economic and Finance Research

URL: https://ideas.repec.org/

Date searched: 31 March 2015.

The IDEAS search interface is only suitable for one-word or phrase searching, so a number of small searches were conducted to identify potentially relevant records (e.g. children AND diabetes, children AND asthma and so on). The search results were cut and pasted into word documents to enable scanning.

Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R)

Date searched: 18 March 2015.

Date range searched: 1946 to present.

Records retrieved: 10,870 records.

Search strategy

1. self administration/ (9309)
2. self administer*.ti,ab. (24,903)
3. (self administer$ adj2 (questionnaire$ or survey$ or interview$)).ti,ab. (15,609)
4. 2 not 3 (9294)
5. self care/ (24,322)
6. (self care$ or selfcaring or selfcare$ or selfcaring).ti,ab. (10,990)
7. (self manag$ or selfmanag$).ti,ab. (9689)
8. (self monitor$ or selfmonitor$ or self report$ or selfreport$).ti,ab. (95,133)
9. (self help$ or selfhelp$).ti,ab. (4821)
10. (self diagnos$ or selfdiagnos$ or self assess$ or selfassess$).ti,ab. (10,513)
11. blood glucose self-monitoring/ (4401)
12. self initiat$.ti,ab. (955)
13. self efficacy/ (12,604)
14. self efficacy.ti,ab. (14,136)
15. self medication/ (4026)
16. (self medicat$ or selfmedicat$ or self remed$ or selfremed$).ti,ab. (2938)

17. (self treat$ or selftreat$ or self cure$ or selfcure$ or self curing or selfcuring).ti,ab. (2268)
18. (collaborat$ adj (care or manag$)).ti,ab. (1381)
19. recovery.ti,ab. (315,800)
20. 1 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 (495,898)
21. social support/ (52,876)
22. social support$.ti,ab. (23,715)
23. (group adj (support$ or advice or advis$ or monitor$ or intervention$ or train$ or instruct$ or consult$ or assist$ or educat$ or information)).ti,ab. (5138)
24. (peer adj (support$ or advice or advis$ or monitor$ or intervention$ or train$ or instruct$ or consult$ or assist$ or educat$ or information)).ti,ab. (3223)
25. ((mutual or telephone) adj support).ti,ab. (809)
26. (expert patient$ or virtual communit$ or online communit$).ti,ab. (662)
27. (befriend$ or coach$ or mentor$ or buddy or buddies).ti,ab. (16,424)
28. health trainer$.ti,ab. (45)
29. telemedicine/ (11,775)
30. (telemedicine or telecare or telenursing or telemonitor$ or telehealth or ehealth).ti,ab. (9452)
31. remote consultation/ (3667)
32. ((telephon$ or remote or phone) adj2 (follow$ or support$ or consult$ or advice or advis$ or intervention$ or instruct$ or assist$ or educate or education or information or monitor$)).ti,ab. (9595)
33. case management/ (8506)
34. (case manag$ or action plan$ or care plan$ or care manag$ or management plan$ or management program$ or care program$ or goal setting or individual goal$).ti,ab. (50,370)
35. Patient Participation/ (18,448)
36. (involv$ or participat$ or collaborat$).ti,ab. (2,006,956)
37. patient education as topic/ (71,385)
38. patient education.ti,ab. (12,012)
39. (patient adj2 (educat$ or advice or advis$ or instruct$ or instruct$ or train$ or coach$)).ti,ab. (17,109)
40. ((consumer health or patient) adj information).ti,ab. (5353)
41. (nurse adj2 educator$).ti,ab. (2644)
42. ((financial or monetary or money) adj2 (incentive$ or competition$ or contest$ or lotter$ or reward$ or prize$)).ti,ab. (4578)
43. (contingent payment$ or deposit contract$).ti,ab. (25)
44. decision making/ (70,170)
45. (decision$ adj2 (shared or support$ or aid or aids or making)).ti,ab. (87,782)
46. (goal set$ or individual goal$).ti,ab. (2251)
47. exp Diet/ or exp exercise/ (313,869)
48. Motivational Interviewing/ (393)
49. Cognitive therapy/ (16,603)
50. (CBT or cognitive therap$ or cognitive behav$).ti,ab. (19,378)
51. Teaching Materials/ or Pamphlets/ (8753)
52. (educational material$ or leaflet$ or booklet$ or toolkit$).ti,ab. (24,101)
53. Bibliotherapy/ (342)
54. Internet/ or Blogging/ or Social Media/ (52,994)
55. Parenting/ (10,836)
56. parent$ training.ti,ab. (778)
57. Behavior Therapy/ (23,664)
58. ((behavior$ or behaviour$) adj (manag$ or modif$)).ti,ab. (5083)
59. Psychotherapy, Brief/ (2781)
60. Psychotherapy, Group/ (11,975)
61. psychoeducat$.ti,ab. (2827)
62. Problem Solving/ (21,273)

63. (skills training or coping skill$ or empower$).ti,ab. (19,438)
64. Adaptation, Psychological/ (76,111)
65. exp Communication/ (374,050)
66. Mindfulness/ (345)
67. Patient Access to Records/ (871)
68. Cell Phones/ or Telephones/ or Text Messaging/ or Reminder Systems/ (16,546)
69. text messag$.ti,ab. (1261)
70. or/21-69 (3,069,577)
71. exp Child/ (1,568,167)
72. Adolescent/ (1,639,965)
73. (child or children or schoolchild$ or baby or babies or infant or infants or toddler$ or teen$ or teenager$ or adolescen$ or young person$ or young people or youth or youngster$ or juvenile$ or paediatric or pediatric).ti,ab. (1,420,691)
74. exp Parents/ (74,561)
75. Caregivers/ (22,451)
76. (parent$ or mother$ or father$ or caregiver$ or carer$ or guardian$ or advocate$ or family).ti,ab. (1,021,910)
77. 71 or 72 or 73 or 74 or 75 or 76 (3,693,299)
78. exp Diabetes Mellitus/ (322,132)
79. Cystic Fibrosis/ (28,835)
80. mucoviscidosis.mp. (1399)
81. exp Asthma/ (107,539)
82. exp "Attention Deficit and Disruptive Behavior Disorders"/ (23,586)
83. Hyperkinesis/ (3695)
84. exp Anxiety/ (57,586)
85. Depression/ (79,319)
86. Depressive Disorder/ (59,030)
87. Self Mutilation/ or Self-Injurious Behavior/ (8004)
88. exp Epilepsy/ (131,823)
89. exp Conduct Disorder/ (2286)
90. exp Mood Disorders/ (117,649)
91. exp Obsessive-Compulsive Disorder/ (11,558)
92. Stress Disorders, Post-Traumatic/ (21,973)
93. exp Psychotic Disorders/ (39,064)
94. exp Eating Disorders/ (22,708)
95. exp Schizophrenia/ (86,432)
96. exp Bipolar Disorder/ (32,171)
97. Phobic Disorders/ (9386)
98. Panic Disorder/ (6032)
99. school refusal.ti,ab. (207)
100. Mental Health/ (22,673)
101. 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 or 99 or 100 (1,006,004)
102. economics/ (26,582)
103. exp "Costs and Cost Analysis"/ (185,512)
104. value of life/ (5422)
105. exp economics, hospital/ or economics, medical/ or economics, nursing/ or economics, pharmaceutical/ or economics, dental/ (36,516)
106. (econom$ or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic$).ti,ab. (507,710)
107. (expenditure$ not energy).tw. (19,526)

108. (value adj money).tw. (5)
109. budget$.tw. (19,998)
110. hospitalization/ or "length of stay"/ or patient admission/ or patient readmission/ (148,295)
111. health resources/ (9102)
112. (length adj2 stay).ti,ab. (30,699)
113. (duration adj2 stay).ti,ab. (2182)
114. (hospital adj (access$ or uptake or visit$ or attendance$ or admission$ or admit$ or episode$)).ti,ab. (27,387)
115. hospital cost$.ti,ab. (5555)
116. (time adj2 discharg$).ti,ab. (4083)
117. hospital day$.ti,ab. (4364)
118. ((patient$ or inpatient$ or in-patient$) adj (cost$ or stay$)).ti,ab. (5452)
119. (number adj2 (nights or days)).ti,ab. (8981)
120. (primary care adj (visit$ or contact$ or attendance$ or admission$ or episode$)).ti,ab. (953)
121. (surgery adj (visit$ or contact$ or attendance$ or admission$ or episode$)).ti,ab. (232)
122. (GP adj (access or uptake or visit$ or contact$ or attendance$ or admission$ or episode$)).ti,ab. (407)
123. ((uptake or access) adj (service$ or care or intervention$)).ti,ab. (721)
124. ((clinic or surgery or hospital or "accident and emergency") adj2 (work-flow or work flow)).ti,ab. (6)
125. (consultation$ adj2 (time or length)).ti,ab. (1013)
126. (hospitalisation$ or hospitalization$ or rehospitalisation$ or rehospitalization$ or re-hospitalisation$ or re-hospitalization$).ti,ab. (101,245)
127. (hrql or hrqol or h qol or hql or hqol).ti,ab. (10,897)
128. quality adjusted life year/ (7363)
129. (qaly$ or quality adjusted life or quality of life or life quality).tw. (163,414)
130. 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114 or 115 or 116 or 117 or 118 or 119 or 120 or 121 or 122 or 123 or 124 or 125 or 126 or 127 or 128 or 129 (993,754)
131. 20 or 70 (3,436,791)
132. 131 and 77 and 101 and 130 (10,689)
133. Cool Kids.ti,ab. (7)
134. Sweet talk.ti,ab. (15)
135. Timid to Tiger.ti,ab. (1)
136. "problem solving for life".ti,ab. (9)
137. Incredible Years.ti,ab. (95)
138. Triple P.ti,ab. (136)
139. friends program$.ti,ab. (11)
140. 133 or 134 or 135 or 136 or 137 or 138 or 139 (266)
141. 132 or 140 (10,943)
142. animals/ not humans/ (3,907,576)
143. 141 not 142 (10,938)
144. (editorial or comment or letter).pt. (1,386,778)
145. 143 not 144 (10,870)

Paediatric Economic Database Evaluation

URL: http://pede.ccb.sickkids.ca/pede/index.jsp

Date searched: 31 March 2015.

The PEDE search interface is only suitable for one word or phrase searching so a number of small searches were conducted to identify potentially relevant records (e.g. self, diabetes, asthma, depression and so on). A total of 480 potentially relevant records were downloaded.

PsycINFO (via OVIDSP)

Date searched: 17 March 2015.

Date range searched: 1806 to March week 2 2015.

Records retrieved: 4620.

Search strategy

1. Drug self administration/ (1547)
2. self administer*.ti,ab. (10,130)
3. (self administer$ adj2 (questionnaire$ or survey$ or interview$)).ti,ab. (5254)
4. 2 not 3 (4876)
5. self care skills/ (3532)
6. (self care$ or selfcaring or selfcare$ or selfcaring).ti,ab. (6125)
7. (self manag$ or selfmanag$).ti,ab. (6074)
8. (self monitor$ or selfmonitor$ or self report$ or selfreport$).ti,ab. (87,437)
9. (self help$ or selfhelp$).ti,ab. (6904)
10. (self diagnos$ or selfdiagnos$ or self assess$ or selfassess$).ti,ab. (6241)
11. blood glucose self-monitoring/ (0)
12. self initiat$.ti,ab. (1179)
13. self efficacy/ (15,881)
14. self efficacy.ti,ab. (25,391)
15. self medication/ (562)
16. (self medicat$ or selfmedicat$ or self remed$ or selfremed$).ti,ab. (1279)
17. (self treat$ or selftreat$ or self cure$ or selfcure$ or self curing or selfcuring).ti,ab. (383)
18. (collaborat$ adj (care or manag$)).ti,ab. (835)
19. recovery.ti,ab. (46,680)
20. 1 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 (189,281)
21. social support/ (28,230)
22. social support$.ti,ab. (34,367)
23. (group adj (support$ or advice or advis$ or monitor$ or intervention$ or train$ or instruct$ or consult$ or assist$ or educat$ or information)).ti,ab. (6330)
24. (peer adj (support$ or advice or advis$ or monitor$ or intervention$ or train$ or instruct$ or consult$ or assist$ or educat$ or information)).ti,ab. (3732)
25. ((mutual or telephone) adj support).ti,ab. (868)
26. (expert patient$ or virtual communit$ or online communit$).ti,ab. (1488)
27. (befriend$ or coach$ or mentor$ or buddy or buddies).ti,ab. (22,379)
28. health trainer$.ti,ab. (17)
29. telemedicine/ (2763)
30. (telemedicine or telecare or telenursing or telemonitor$ or telehealth or ehealth).ti,ab. (1937)
31. (remote consult$ or teleconsult$).ti,ab. (105)
32. ((telephon$ or remote or phone) adj2 (follow$ or support$ or consult$ or advice or advis$ or intervention$ or instruct$ or assist$ or educate or education or information or monitor$)).ti,ab. (3067)
33. exp case management/ (2944)
34. (case manag$ or action plan$ or care plan$ or care manag$ or management plan$ or management program$ or care program$ or goal setting or individual goal$).ti,ab. (22,094)
35. Client participation/ (1459)
36. (involv$ or participat$ or collaborat$).ti,ab. (550,207)
37. client education/ (3154)
38. patient education.ti,ab. (2186)
39. (patient adj2 (educat$ or advice or advis$ or instruct$ or instruct$ or train$ or coach$)).ti,ab. (3416)
40. ((consumer health or patient) adj information).ti,ab. (745)

41. (nurse adj2 educator$).ti,ab. (684)
42. ((financial or monetary or money) adj2 (incentive$ or competition$ or contest$ or lotter$ or reward$ or prize$)).ti,ab. (3247)
43. (contingent payment$ or deposit contract$).ti,ab. (31)
44. exp decision making/ (70,405)
45. (decision$ adj2 (shared or support$ or aid or aids or making)).ti,ab. (64,722)
46. (goal set$ or individual goal$).ti,ab. (4646)
47. exp Diets/ or exp exercise/ (26,852)
48. Motivational Interviewing/ (1454)
49. Cognitive therapy/ (11,872)
50. (CBT or cognitive therap$ or cognitive behav$).ti,ab. (34,514)
51. exp Instructional Materials/ (0)
52. (educational material$ or leaflet$ or booklet$ or toolkit$).ti,ab. (4797)
53. Bibliotherapy/ (610)
54. Internet/ or Social Media/ (24,179)
55. exp Parenting/ (76,945)
56. parent$ training.ti,ab. (2578)
57. exp Behavior Therapy/ (17,292)
58. ((behavior$ or behaviour$) adj (manag$ or modif$)).ti,ab. (7480)
59. Psychotherapy, Brief/ (0)
60. exp Group therapy/ (20,117)
61. psychoeducat$.ti,ab. (6489)
62. exp Problem Solving/ (28,843)
63. (skills training or coping skill$ or empower$).ti,ab. (28,916)
64. Adaptative Behavior/ (0)
65. exp Communication/ (191,116)
66. Mindfulness/ (4018)
67. Client Records/ (677)
68. Cellular Phones/ or Telephone Systems/ or Messages/ (9003)
69. text messag$.ti,ab. (940)
70. or/21-69 (1,048,326)
71. childhood birth 12 yrs.ag. (431,936)
72. adolescence 13 17 yrs.ag. (340,365)
73. (child or children or schoolchild$ or baby or babies or infant or infants or toddler$ or teen$ or teenager$ or adolescen$ or young person$ or young people or youth or youngster$ or juvenile$ or paediatric or pediatric).ti,ab. (686,296)
74. exp Parents/ (74,045)
75. Caregivers/ (20,108)
76. (parent$ or mother$ or father$ or caregiver$ or carer$ or guardian$ or advocate$ or family).ti,ab. (474,588)
77. 71 or 72 or 73 or 74 or 75 or 76 (1,087,542)
78. Diabetes Mellitus/ (4020)
79. Cystic Fibrosis/ (687)
80. mucoviscidosis.mp. (4)
81. Asthma/ (3816)
82. exp Attention Deficit Disorder/ (19,781)
83. Hyperkinesis/ (7565)
84. exp Anxiety/ (53,810)
85. Depression/ (22,138)
86. exp Major Depression/ (97,934)
87. Self-Injurious Behavior/ (2077)
88. exp Epilepsy/ (20,442)
89. Conduct Disorder/ (3575)

90. exp Affective Disorders/ (125,594)
91. Obsessive Compulsive Disorder/ (10,627)
92. Posttraumatic Stress Disorder/ (23,065)
93. exp Psychosis/ (95,067)
94. exp Eating Disorder/ (24,088)
95. exp Schizophrenia/ (74,719)
96. exp Bipolar Disorder/ (20,574)
97. exp Phobias/ (11,206)
98. Panic Disorder/ (6929)
99. school refusal.ti,ab. (478)
100. exp Mental Health/ (44,641)
101. 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 or 99 or 100 (422,609)
102. exp economics/ (18,357)
103. exp costs/ (19,890)
104. (econom$ or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic$).ti,ab. (163,542)
105. (expenditure$ not energy).tw. (5744)
106. (value adj money).tw. (11)
107. budget$.tw. (6378)
108. hospitalization/ or "length of stay"/ or patient admission/ or patient readmission/ (8465)
109. ((healthcare or health) adj resource$).ti,ab. (1564)
110. (length adj2 stay).ti,ab. (3614)
111. (duration adj2 stay).ti,ab. (240)
112. (hospital adj (access$ or uptake or visit$ or attendance$ or admission$ or admit$ or episode$)).ti,ab. (3798)
113. hospital cost$.ti,ab. (252)
114. (time adj2 discharg$).ti,ab. (578)
115. hospital day$.ti,ab. (388)
116. ((patient$ or inpatient$ or in-patient$) adj (cost$ or stay$)).ti,ab. (911)
117. (number adj2 (nights or days)).ti,ab. (1891)
118. (primary care adj (visit$ or contact$ or attendance$ or admission$ or episode$)).ti,ab. (360)
119. (surgery adj (visit$ or contact$ or attendance$ or admission$ or episode$)).ti,ab. (11)
120. (GP adj (access or uptake or visit$ or contact$ or attendance$ or admission$ or episode$)).ti,ab. (102)
121. ((uptake or access) adj (service$ or care or intervention$)).ti,ab. (331)
122. ((clinic or surgery or hospital or "accident and emergency") adj2 (work-flow or work flow)).ti,ab. (1)
123. (consultation$ adj2 (time or length)).ti,ab. (252)
124. (hospitalisation$ or hospitalization$ or rehospitalisation$ or rehospitalization$ or re-hospitalisation$ or re-hospitalization$).ti,ab. (21,193)
125. (hrql or hrqol or h qol or hql or hqol).ti,ab. (3414)
126. (qaly$ or quality adjusted life or quality of life or life quality).tw. (45,441)
127. 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114 or 115 or 116 or 117 or 118 or 119 or 120 or 121 or 122 or 123 or 124 or 125 or 126 (246,148)
128. 20 or 70 (1,167,628)
129. 128 and 77 and 101 and 127 (4155)
130. Cool Kids.ti,ab. (20)
131. Sweet talk.ti,ab. (5)
132. Timid to Tiger.ti,ab. (3)
133. "problem solving for life".ti,ab. (25)
134. Incredible Years.ti,ab. (160)
135. Triple P.ti,ab. (231)
136. friends program$.ti,ab. (38)
137. 130 or 131 or 132 or 133 or 134 or 135 or 136 (474)
138. 129 or 137 (4620)

Science Citation Index and Social Science Citation Index (Searched using Web of Science)

Date searched: 19 March 2015.

Date range searched: Science Citation Index – 1900 to present.

Date range searched: SSCI – 1956 to present.

Records retrieved from both databases: 12,737 records.

Search strategy

#36	12,737	#34 not #35 Indexes=SCI-EXPANDED, SSCI Timespan=All years
#35	2,992,107	TI=(rat or rats or mouse or mice or hamster or hamsters or dog or dogs or cat or cats or feline or bovine or sheep or fly or flies or fish or fishes or fisheries or horse or horses or equine or bat or bats or bee or bees or grass or grasses or bird or birds or avian or fossil or fossils or lichen or lichens or mushroom or mushrooms or rabbit or rabbits or moss or mosses or fungus or fungi or cow or cattle or bovine or livestock or swine or poultry or genera or species or fauna or habitat or marine or ecology) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#34	12,774	#33 OR #32 Indexes=SCI-EXPANDED, SSCI Timespan=All years
#33	505	TS=("Cool Kids" or "Sweet talk" or "Timid to Tiger" or "problem solving for life" or "Incredible Years" or "Triple P" or "friends program*") Indexes=SCI-EXPANDED, SSCI Timespan=All years
#32	12,295	#31 AND #30 AND #18 AND #17 Indexes=SCI-EXPANDED, SSCI Timespan=All years
#31	4,194,119	#16 OR #5 Indexes=SCI-EXPANDED, SSCI Timespan=All years
#30	1,789,043	#29 OR #28 OR #27 OR #26 OR #25 OR #24 OR #23 OR #22 OR #21 OR #20 OR #19 Indexes=SCI-EXPANDED, SSCI Timespan=All years
#29	211,979	TS=(hrql or hrqol or h-qol or hql or hqol or qaly* or "quality adjusted life" or "quality of life" or "life quality") Indexes=SCI-EXPANDED, SSCI Timespan=All years
#28	1361	TS=(consultation* near/2 (time or length)) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#27	5	TS=("accident and emergency" SAME (work-flow or work flow)) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#26	12	TS=((clinic or surgery or hospital) near/2 (work-flow or "work flow")) Indexes=SCI-EXPANDED, SSCI Timespan=All years

#25	86,270	TS=("primary care visit*" or "primary care contact*" or "primary care attendance*" or "primary care admission*" or "primary care episode*" or "surgery visit*" or "surgery contact*" or "surgery attendance*" or "surgery admission*" or "surgery episode*" or "GP access" or "GP uptake" or "GP visit*" or "GP contact*" or "GP attendance*" or "GP admission*" or "GP episode*" or "uptake service*" or "uptake care" or "uptake intervention*" or "access service*" or "access care" or "access intervention*" or hospitalisation* or hospitalization* or rehospitalisation* or rehospitalization* or re-hospitalisation* or re-hospitalization*) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#24	18,204	TS=(number near/2 (nights or days)) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#23	7480	TS=(time near/2 discharg*) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#22	4626	TS=(duration near/2 stay) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#21	38,610	TS=(length near/2 stay) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#20	34,617	TS=(expenditure* not energy) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#19	1,480,654	TS=(econom* or cost or costs or costly or costing or price or prices or pricing or pharmacoeconomic* or "value for money" or budget* or "hospital access*" or "hospital uptake" or "hospital visit*" or "hospital attendance*" or "hospital admission*" or "hospital admit*" or "hospital episode*" or "hospital cost*" or "hospital day*" or "patient* cost*" or "inpatient* cost*" or "in-patient* cost*" or "patient* stay*" or "inpatient* stay*" or "in-patient* stay") Indexes=SCI-EXPANDED, SSCI Timespan=All years
#18	1,075,262	TS=("Diabetes Mellitus" or "Cystic Fibrosis" or mucoviscidosis or Asthma or "Attention Deficit disorder*" or "Disruptive Behaviour disorder*" or "Disruptive Behavior disorder*" or Hyperkinesis or Anxiety or Depression or "Depressive Disorder*" or Epilepsy or "Conduct Disorder*" or "Mood Disorder*" or "Obsessive-Compulsive Disorder*" or "Post-Traumatic Stress Disorder*" or "Psychotic Disorder*" or "Eating Disorder*" or Schizophrenia or "Bipolar Disorder*" or "Phobic Disorder*" or "Panic Disorder*" or "school refusal" or "Mental Health" or "Self Mutilation" or "Self-Injurious Behavior*" or "Self-Injurious Behaviour*") Indexes=SCI-EXPANDED, SSCI Timespan=All years
#17	2,818,271	TS=(child or children or schoolchild* or baby or babies or infant or infants or toddler* or teen* or teenager* or adolescen* or "young person*" or "young people" or youth or youngster* or juvenile* or paediatric or pediatric or parent* or mother* or father* or caregiver* or carer* or guardian* or advocate* or family) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#16	3,686,708	#15 OR #14 OR #13 OR #12 OR #11 OR #10 OR #9 OR #8 OR #7 OR #6 Indexes=SCI-EXPANDED, SSCI Timespan=All years
#15	1,215,905	TS=(diet or exercise or "Motivational Interviewing" or CBT or "cognitive therap*" or "cognitive behav*" or "teaching material*" or pamphlet* or "educational material*" or leaflet* or booklet* or toolkit* or Bibliotherapy or Internet or Blogging or Social Media or "parent* training" or "Behavior Therapy" or "Behaviour Therapy" or "behavior* manag*" or "behaviour* manag*" or "behavior* modif*" or "behaviour* modif*" or psychoeducat* or "Problem Solving" or "skills training" or "coping skill*" or empower* or communication or Mindfulness or "patient access to records" or "Cell Phones" or Telephones or "Text Messaging" or "Reminder Systems" or "text messag*") Indexes=SCI-EXPANDED, SSCI Timespan=All years
#14	1132	TS=(Adaptation near/2 Psychological) Indexes=SCI-EXPANDED, SSCI Timespan=All years

#13	6107	TS=(Psychotherapy near/2 (Brief or group)) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#12	216,156	TS=(decision* near/2 (shared or support* or aid or aids or making)) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#11	7395	TS=((financial or monetary or money) near/2 (incentive* or competition* or contest* or lotter* or reward* or prize*)) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#10	1796	TS=(nurse near/2 educator*) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#9	33,339	TS=(patient near/2 (educat* or advice or advis* or instruct* or instruct* or train* or coach*)) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#8	2,406,262	TS=("case manag*" or "action plan*" or "care plan*" or "care manag*" or "management plan*" or "management program*" or "care program*" or "goal setting" or "individual goal*" or involv* or participat* or collaborat* or "patient education" or "consumer health information" or "patient information" or "contingent payment*" or "deposit contract*" or "goal set*" or "individual goal*") Indexes=SCI-EXPANDED, SSCI Timespan=All years
#7	15,609	TS=((telephon* or remote or phone) near/2 (follow* or support* or consult* or advice or advis* or intervention* or instruct* or assist* or educate or education or information or monitor*)) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#6	87,375	TS=("social support*" or "group support*" or "group advice" or "group advis*" or "group monitor*" or "group intervention*" or "group train*" or "group instruct*" or "group consult*" or "group assist*" or "group educat*" or "group information" or "peer support*" or "peer advice" or "peer advis*" or "peer monitor*" or "peer intervention*" or "peer train*" or "peer instruct*" or "peer consult*" or "peer assist*" or "peer educat*" or "peer information" or "mutual support" or "telephone support" or "expert patient*" or "virtual communit*" or "online communit*" or befriend* or coach* or mentor* or buddy or buddies or "health trainer*" or telemedicine or telecare or telenursing or telemonitor* or telehealth or ehealth) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#5	651,796	#4 OR #3 Indexes=SCI-EXPANDED, SSCI Timespan=All years
#4	645,267	TS=(self-care* or selfcaring or selfcare* or selfcaring or self-manag* or selfmanag* or self-monitor* or selfmonitor* or self-report* or selfreport* or self-help* or selfhelp* or self-diagnos* or selfdiagnos* or self-assess* or selfassess* or self-initiat* or self-efficacy or self-medicat* or selfmedicat* or self-remed* or selfremed* or self-treat* or selftreat* or self-cure* or selfcure* or self-curing or selfcuring or "collaborat* care" or "collaborat* manag*" or recovery) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#3	7269	#1 not #2 Indexes=SCI-EXPANDED, SSCI Timespan=All years
#2	14,320	TS=(self-administer* near/2 (questionnaire* or survey* or interview*)) Indexes=SCI-EXPANDED, SSCI Timespan=All years
#1	21,589	TS=self-administer* Indexes=SCI-EXPANDED, SSCI Timespan=All years

Appendix 2 Economic checklist template

Question 1: study clarity.

Question 2: comprehensive description of competing alternatives.

Question 3: perspective.

1 = Societal.

2 = Health-care system and patient.

3 = Health-care system.

4 = Not clear.

Question 4: study design.

5 = RCT

6 = Case–control trial.

7 = Before and after.

8 = Decision model.

Question 5: economic study design.

9 = Cost-effectiveness analysis.

10 = Cost–consequence analysis.

11 = Cost–utility analysis.

Question 6: design adequacy given study type.

Question 7a: relevant costs identified.

Question 7b: relevant consequences identified.

Question 8a: costs measured accurately.

Question 8b: consequences measured adequately.

Question 9: statistical analysis appropriateness given the design.

Question 10a: subgroup analysis.

Question 10b: subgroups prespecified.

Question 11: discounting.

Question 12: incremental analysis.

Question 13: allowance for uncertainty.

Question 14: missing data handled appropriately.

Question 15a: economic model.

Question 15b: appropriateness of economic model.

Question 16: funder stated (yes/no).

Question 16a: type of funder.

12 = public/voluntary sector.

13 = private sector.

14 = do not state.

Question 16b: generalisability.

Question 16c: presentation and discussion of key results.

Appendix 3 List of included studies

Indented studies denote additional papers associated with the same top-line study.

Study	Reference number
Atherly A, Nurmagambetov T, Williams S, Griffith M. An economic evaluation of the school-based 'power breathing' asthma program. *J Asthma* 2009;**46**:596–9	76
Bartholomew LK, Gold RS, Parcel GS, Czyzewski DI, Sockrider MM, Fernandez M, *et al.* Watch, discover, think, and act: evaluation of computer-assisted instruction to improve asthma self-management in inner-city children. *Patient Educ Couns* 2000;**39**:269–80	77
Bird SR, Noronha M, Kurowski W, Orkin C, Sinnott H. Integrated care facilitation model reduces use of hospital resources by patients with pediatric asthma. *J Healthc Qual* 2012;**34**:25–33	78
Brazil K, McLean L, Abbey D, Musselman C. The influence of health education on family management of childhood asthma. *Patient Educ Couns* 1997;**30**:107–18	79
Brown JV, Bakeman R, Celano MP, Demi AS, Kobrynski L, Wilson SR. Home-based asthma education of young low-income children and their families. *J Pediatr Psychol* 2002;**27**:677–88	80
Browning S, Corrigall R, Garety P, Emsley R, Jolley S. Psychological interventions for adolescent psychosis: a pilot controlled trial in routine care. *Eur Psychiatry* 2013;**28**:423–6	81
Bruzzese JM, Sheares BJ, Vincent EJ, Du Y, Sadeghi H, Levison MJ, *et al.* Effects of a school-based intervention for urban adolescents with asthma. A controlled trial. *Am J Respir Crit Care Med* 2011;**183**:998–1006	82
Bryant-Stephens T, Kurian C, Guo R, Zhao H. Impact of a household environmental intervention delivered by lay health workers on asthma symptom control in urban, disadvantaged children with asthma. *Am J Public Health* 2009;**99**(Suppl. 3):S657–65	83
Butz A, Pham L, Lewis L, Lewis C, Hill K, Walker J, *et al.* Rural children with asthma: impact of a parent and child asthma education program. *J Asthma* 2005;**42**:813–21	84
Walker J, Winkelstein M, Land C, Lewis-Boyer L, Quartey R, Pham L, *et al.* Factors that influence quality of life in rural children with asthma and their parents. *J Pediatr Health Care* 2008;**22**:343–50	85
Butz A, Kub J, Donithan M, James NT, Thompson RE, Bellin M, *et al.* Influence of caregiver and provider communication on symptom days and medication use for inner-city children with asthma. *J Asthma* 2010;**47**:478–85	86
Byford S, Harrington R, Torgerson D, Kerfoot M, Dyer E, Harrington V, *et al.* Cost-effectiveness analysis of a home-based social work intervention for children and adolescents who have deliberately poisoned themselves. Results of a randomised controlled trial. *Br J Psychiatry* 1999;**174**:56–62	87
Harrington R, Kerfoot M, Dyer E, McNiven F, Gill J, Harrington V, *et al.* Randomized trial of a home-based family intervention for children who have deliberately poisoned themselves. *J Am Acad Child Adolesc Psychiatry* 1998;**37**:512–18	88
Byford S, Barrett B, Roberts C, Wilkinson P, Dubicka B, Kelvin R, *et al.* Cost-effectiveness of selective serotonin reuptake inhibitors and routine specialist care with and without cognitive-behavioural therapy in adolescents with major depression. *Br J Psychiatry* 2007;**191**:521–7	89
Goodyer I, Dubicka B, Wilkinson P, Kelvin R, Roberts C, Byford S, *et al.* Selective serotonin reuptake inhibitors (SSRIs) and routine specialist care with and without cognitive behaviour therapy in adolescents with major depression: randomised controlled trial. *BMJ* 2007;**335**:142	90
Byford S, Barrett B, Roberts C, Clark A, Edwards V, Smethurst N, *et al.* Economic evaluation of a randomised controlled trial for anorexia nervosa in adolescents. *Br J Psychiatry* 2007;**191**:436–40	91
Gowers SG, Clark A, Roberts C, Griffiths A, Edwards V, Bryan C, *et al.* Clinical effectiveness of treatments for anorexia nervosa in adolescents: randomised controlled trial. *Br J Psychiatry* 2007;**191**:427–35	92
Gowers SG, Clark AF, Roberts C, Byford S, Barrett B, Griffiths A, *et al.* A randomised controlled multicentre trial of treatments for adolescent anorexia nervosa including assessment of cost-effectiveness and patient acceptability – the TOuCAN trial. *Health Technol Assess* 2010;**14**(15)	93

Study	Reference number
Calvo A, Moreno M, Ruiz-Sancho A, Rapado-Castro M, Moreno C, Sánchez-Gutiérrez T, *et al.* Intervention for adolescents with early-onset psychosis and their families: a randomized controlled trial. *J Am Acad Child Adolesc Psychiatry* 2014;**53**:688–96	94
Cano-Garcinuño A, Díaz-Vázquez C, Carvajal-Urueña I, Praena-Crespo M, Gatti-Viñoly A, García-Guerra I. Group education on asthma for children and caregivers: a randomized, controlled trial addressing effects on morbidity and quality of life. *J Invest Allerg Clin* 2007;**17**:216–26	95
Carswell F, Robinson EJ, Hek G, Shenton T. A Bristol experience: benefits and cost of an 'asthma nurse' visiting the homes of asthmatic children. *Bristol Med Chir J* 1989;**104**:11–12	96
Celano MP, Holsey CN, Kobrynski LJ. Home-based family intervention for low-income children with asthma: a randomized controlled pilot study. *J Fam Psychol* 2012;**26**:171–8	97
Chan DS, Callahan CW, Sheets SJ, Moreno CN, Malone FJ. An Internet-based store-and-forward video home telehealth system for improving asthma outcomes in children. *Am J Health Syst Pharm* 2003;**60**:1976–81	98
Chan DS, Callahan CW, Hatch-Pigott VB, Lawless A, Proffitt HL, Manning NE, *et al.* Internet-based home monitoring and education of children with asthma is comparable to ideal office-based care: results of a 1-year asthma in-home monitoring trial. *Pediatrics* 2007;**119**:569–78	99
Christie D, Thompson R, Sawtell M, Allen E, Cairns J, Smith F, *et al.* Structured, intensive education maximising engagement, motivation and long-term change for children and young people with diabetes: a cluster randomised controlled trial with integral process and economic evaluation – the CASCADE study. *Health Technol Assess* 2014;**18**(20)	100
Cicutto L, Murphy S, Coutts D, O'Rourke J, Lang G, Chapman C, *et al.* Breaking the access barrier: evaluating an asthma center's efforts to provide education to children with asthma in schools. *Chest* 2005;**128**:1928–35	101
Cicutto L, To T, Murphy S. A randomized controlled trial of a public health nurse-delivered asthma program to elementary schools. *J School Health* 2013;**83**:876–84	102
Clark NM, Gong M, Kaciroti N, Yu J, Wu G, Zeng Z, *et al.* A trial of asthma self-management in Beijing schools. *Chronic Illn* 2005;**1**:31–8	103
Cowie RL, Underwood MF, Little CB, Mitchell I, Spier S, Ford GT. Asthma in adolescents: a randomized, controlled trial of an asthma program for adolescents and young adults with severe asthma. *Can Respir J* 2002;**9**:253–9	104
Domino ME, Burns BJ, Silva SG, Kratochvil CJ, Vitiello B, Reinecke MA, *et al.* Cost-effectiveness of treatments for adolescent depression: results from TADS. *Am J Psychiatry* 2008;**165**:588–96	105
Domino ME, Foster EM, Vitiello B, Kratochvil CJ, Burns BJ, Silva SG, *et al.* Relative cost-effectiveness of treatments for adolescent depression: 36-week results from the TADS randomized trial. *J Am Acad Child Adolesc Psychiatry* 2009;**48**:711–20	106
March J, Silva S, Vitiello B, TADS Team. The Treatment for Adolescents with Depression Study (TADS): methods and message at 12 weeks. *J Am Acad Child Adolesc Psychiatry* 2006;**45**:1393–403	107
March JS, Vitiello B. Clinical messages from the Treatment for Adolescents With Depression Study (TADS). *Am J Psychiatry* 2009;**166**:1118–23	108
Treatment for Adolescents with Depression Study (TADS) Team. The Treatment for Adolescents with Depression Study (TADS): demographic and clinical characteristics. *J Am Acad Child Psy* 2005;**44**:28–40	109
Donaldson D, Spirito A, Esposito-Smythers C. Treatment for adolescents following a suicide attempt: results of a pilot trial. *J Am Acad Child Adolesc Psychiatry* 2005;**44**:113–20	110
Dougherty GE, Soderstrom L, Schiffrin A. An economic evaluation of home care for children with newly diagnosed diabetes: results from a randomized controlled trial. *Med Care* 1998;**36**:586–98	111
Dougherty G, Schiffrin A, White D, Soderstrom L, Sufrategui M. Home-based management can achieve intensification cost-effectively in type I diabetes. *Pediatrics* 1999;**103**:122–8	112
Eakin MN, Rand CS, Bilderback A, Bollinger ME, Butz A, Kandasamy V, *et al.* Asthma in Head Start children: effects of the Breathmobile program and family communication on asthma outcomes. *J Allergy Clin Immunol* 2012;**129**:664–70	113
Edwards RT, Céilleachair A, Bywater T, Hughes DA, Hutchings J. Parenting programme for parents of children at risk of developing conduct disorder: cost effectiveness analysis. *BMJ* 2007;**334**:682	114

Study	Reference number
Hutchings J, Gardner F, Bywater T, Daley D, Whitaker C, Jones K, *et al.* Parenting intervention in Sure Start services for children at risk of developing conduct disorder: pragmatic randomised controlled trial. *BMJ* 2007;**334**:678	115
Espinoza-Palma T, Zamorano A, Arancibia F, Bustos MF, Silva MJ, Cardenas C, *et al.* Effectiveness of asthma education with and without a self-management plan in hospitalized children. *J Asthma* 2009;**46**:906–10	116
Esposito-Smythers C, Spirito A, Kahler CW, Hunt J, Monti P. Treatment of co-occurring substance abuse and suicidality among adolescents: a randomized trial. *J Consult Clin Psychol* 2011;**79**:728–39	117
Farber HJ, Oliveria L. Trial of an asthma education program in an inner-city pediatric emergency department. *Pediatr Asthma Aller* 2004;**17**:107–15	118
Flapper BC, Duiverman EJ, Gerritsen J, Postema K, van der Schans CP. Happiness to be gained in paediatric asthma care. *Eur Respir J* 2008;**32**:1555–62	119
Flores G, Bridon C, Torres S, Perez R, Walter T, Brotanek J, *et al.* Improving asthma outcomes in minority children: a randomized, controlled trial of parent mentors. *Pediatrics* 2009;**124**:1522–32	120
Foster EM, Jensen PS, Schlander M, Pelham WE Jr, Hechtman L, Arnold LE, *et al.* Treatment for ADHD: Is more complex treatment cost-effective for more complex cases? *Health Serv Res* 2007;**42**:165–82	121
Swanson JM, Kraemer HC, Hinshaw SP, Arnold LE, Conners CK, Abikoff HB, *et al.* Clinical relevance of the primary findings of the MTA: success rates based on severity of ADHD and ODD symptoms at the end of treatment. *J Am Acad Child Adolesc Psychiatry* 2001;**40**:168–79	122
Wells KC, Pelham WE, Kotkin RA, Hoza B, Abikoff HB, Abramowitz A, *et al.* Psychosocial treatment strategies in the MTA study: rationale, methods, and critical issues in design and implementation. *J Abnorm Child Psychol* 2000;**28**:483–505	123
Molina BS, Hinshaw SP, Swanson JM, Arnold LE, Vitiello B, Jensen PS, *et al.* The MTA at 8 years: prospective follow-up of children treated for combined-type ADHD in a multisite study. *J Am Acad Child Adolesc Psychiatry* 2009;**48**:484–500	124
Jensen PS, Garcia JA, Glied S, Crowe M, Foster M, Schlander M, *et al.* Cost-effectiveness of ADHD treatments: findings from the multimodal treatment study of children with ADHD. *Am J Psychiatry* 2005;**162**:1628–36	125
The MTA Cooperative Group. A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder. *Arch Gen Psychiat* 1999;**56**:1073–86	126
Franklin VL, Waller A, Pagliari C, Greene SA. A randomized controlled trial of Sweet Talk, a text-messaging system to support young people with diabetes. *Diabet Med* 2006;**23**:1332–8	127
Galbreath AD, Smith B, Wood PR, Inscore S, Forkner E, Vazquez M, *et al.* Assessing the value of disease management: impact of 2 disease management strategies in an underserved asthma population. *Ann Allergy Asthma Immunol* 2008;**101**:599–607	128
Garbutt JM, Banister C, Highstein G, Sterkel R, Epstein J, Bruns J, *et al.* Telephone coaching for parents of children with asthma: impact and lessons learned. *Arch Pediatr Adolesc Med* 2010;**164**:625–30	129
Godart N, Berthoz S, Curt F, Perdereau F, Rein Z, Wallier J, *et al.* A randomized controlled trial of adjunctive family therapy and treatment as usual following inpatient treatment for anorexia nervosa adolescents. *PLOS ONE* 2012;**7**:e28249	130
Gorelick MH, Meurer JR, Walsh-Kelly CM, Brousseau DC, Grabowski L, Cohn J, *et al.* Emergency department allies: a controlled trial of two emergency department-based follow-up interventions to improve asthma outcomes in children. *Pediatrics* 2006;**117**:S127–34	131
Grainger-Rousseau TJ, Mc Elnay JC. A model for community pharmacist involvement with general practitioners in the management of asthma patients. *J Appl Ther* 1996;**1**:145–61	132
Green JM, Wood AJ, Kerfoot MJ, Trainor G, Roberts C, Rothwell J, *et al.* Group therapy for adolescents with repeated self harm: randomised controlled trial with economic evaluation. *BMJ* 2011;**342**:d682	133
Guendelman S, Meade K, Benson M, Chen YQ, Samuels S. Improving asthma outcomes and self-management behaviors of inner-city children: a randomized trial of the Health Buddy interactive device and an asthma diary. *Arch Pediatr Adolesc Med* 2002;**156**:114–20	20
Guendelman S, Meade K, Chen YQ, Benson M. Asthma control and hospitalizations among inner-city children: results of a randomized trial. *Telemed J E Health* 2004;**10**(Suppl. 2):6–14	134

Study	Reference number
Hederos CA, Janson S, Hedlin G. Six-year follow-up of an intervention to improve the management of preschool children with asthma. *Acta Paediatr* 2009;**98**:1939–44	135
Hederos CA, Janson S, Hedlin G. Group discussions with parents have long-term positive effects on the management of asthma with good cost-benefit. *Acta Paediatr* 2005;**94**:602–8	136
Homer C, Susskind O, Alpert HR, Owusu C, Schneider L, Rappaport LA, *et al.* An evaluation of an innovative multimedia educational software program for asthma management: report of a randomized, controlled trial. *Pediatrics* 2000;**106**:210–15	137
Horner SD, Brown A. Evaluating the effect of an asthma self-management intervention for rural families. *J Asthma* 2014;**51**:168–77	138
Hughes DM, McLeod M, Garner B, Goldbloom RB. Controlled trial of a home and ambulatory program for asthmatic children. *Pediatrics* 1991;**87**:54–61	139
Husted GR, Thorsteinsson B, Esbensen BA, Gluud C, Winkel P, Hommel E, *et al.* Effect of guided self-determination youth intervention integrated into outpatient visits versus treatment as usual on glycemic control and life skills: a randomized clinical trial in adolescents with type 1 diabetes. *Trials* 2014;**15**:321	140
Indinnimeo L, Mercuri M, Marolla F, Raponi M, Ronchetti R. Asthma education program in outpatient children. *Ital J Pediatr* 1997;**23**:873–7	141
Indinnimeo L, Bonci E, Capra L, La Grutta S, Monaco F, Paravati F, *et al.* Clinical effects of a long-term educational program for children with asthma – Aironet. A 1-yr randomized controlled trial. *Pediatr Allergy Immunol* 2009;**20**:654–9	142
Joseph CL, Peterson E, Havstad S, Johnson CC, Hoerauf S, Stringer S, *et al.* A web-based, tailored asthma management program for urban African-American high school students. *Am J Respir Crit Care Med* 2007;**175**:888–95	143
Kamps JL, Rapoff MA, Roberts MC, Varela RE, Barnard M, Olson N. Improving adherence to inhaled corticosteroids in children with asthma: a pilot of a randomized clinical trial. *Child Health Care* 2008;**37**:261–77	144
Kattan M, Stearns SC, Crain EF, Stout JW, Gergen PJ, Evans R, *et al.* Cost-effectiveness of a home-based environmental intervention for inner-city children with asthma. *J Allergy Clin Immunol* 2005;**116**:1058–63	145
Morgan WJ, Crain EF, Gruchalla RS, O'Connor GT, Kattan M, Evans R, *et al.* Results of a home-based environmental intervention among urban children with asthma. *N Engl J Med* 2004;**351**:1068–80	146
Katz LY, Cox BJ, Gunasekara S, Miller AL. Feasibility of dialectical behavior therapy for suicidal adolescent inpatients. *J Am Acad Child Adolesc Psychiatry* 2004;**43**:276–82	147
Khan MS, O'Meara M, Stevermuer TL, Henry RL. Randomized controlled trial of asthma education after discharge from an emergency department. *J Paediatr Child Health* 2004;**40**:674–7	148
Khan MS, O'Meara M, Henry RL. Background severity of asthma in children discharged from the emergency department. *J Paediatr Child Health* 2003;**39**:432–5	149
Krieger J, Takaro TK, Song L, Beaudet N, Edwards K. A randomized controlled trial of asthma self-management support comparing clinic-based nurses and in-home community health workers: the Seattle-King County Healthy Homes II Project. *Arch Pediat Adol Med* 2009;**163**:141–9	150
Sunshine J, Song L, Krieger J. Written action plan use in inner-city children: is it independently associated with improved asthma outcomes? *Ann Allergy Asthma Immunol* 2011;**107**:207–13	151
Krishna S, Francisco BD, Balas EA, König P, Graff GR, Madsen RW, *et al.* Internet-enabled interactive multimedia asthma education program: a randomized trial. *Pediatrics* 2003;**111**:503–10	152
Krishna S, Balas EA, Francisco BD, Konig P. Effective and sustainable multimedia education for children with asthma: a randomized controlled trial. *Child Health Care* 2006;**35**:75–90	153
Lewis CE, Rachelefsky G, Lewis MA, de la Sota A, Kaplan M. A randomized trial of A.C.T. (asthma care training) for kids. *Pediatrics* 1984;**74**:478–86	154
Lynch FL, Dickerson JF, Clarke G, Vitiello B, Porta G, Wagner KD, *et al.* Incremental cost-effectiveness of combined therapy vs medication only for youth with selective serotonin reuptake inhibitor-resistant depression: treatment of SSRI-resistant depression in adolescents trial findings. *Arch Gen Psychiatry* 2011;**68**:253–62	155

Study	Reference number
Asarnow JR, Jaycox LH, Tang L, Duan N, LaBorde AP, Zeledon LR, *et al.* Long-term benefits of short-term quality improvement interventions for depressed youths in primary care. *Am J Psychiatry* 2009;**166**:1002–10	156
Brent D, Emslie G, Clarke G, Wagner KD, Asarnow JR, Keller M, *et al.* Switching to another SSRI or to venlafaxine with or without cognitive behavioral therapy for adolescents with SSRI-resistant depression: the TORDIA randomized controlled trial. *JAMA* 2008;**299**:901–13	157
Madge P, McColl J, Paton J. Impact of a nurse-led home management training programme in children admitted to hospital with acute asthma: a randomised controlled study. *Thorax* 1997;**52**:223–8	158
Maslennikova GY, Morosova ME, Salman NV, Kulikov SM, Oganov RG. Asthma education programme in Russia: educating patients. *Patient Educ Couns* 1998;**33**:113–27	159
MeGhan SL, Wong E, Jhangri GS, Wells HM, Michaelchuk DR, Boechler VL, *et al.* Evaluation of an education program for elementary school children with asthma. *J Asthma* 2003;**40**:523–33	160
McGhan SL, Wong E, Sharpe HM, Hessel PA, Mandhane P, Boechler VL, *et al.* A children's asthma education program: Roaring Adventures of Puff (RAP), improves quality of life. *Can Respir J* 2010;**17**:67–73	161
Mehlum L, Tørmoen AJ, Ramberg M, Haga E, Diep LM, Laberg S, *et al.* Dialectical behavior therapy for adolescents with repeated suicidal and self-harming behavior: a randomized trial. *J Am Acad Child Adolesc Psychiatry* 2014;**53**:1082–91	162
Mitchell EA, Ferguson V, Norwood M. Asthma education by community child health nurses. *Arch Dis Child* 1986;**61**:1184–9	163
Muntz R, Hutchings J, Edwards RT, Hounsome B, O'Céilleachair A. Economic evaluation of treatments for children with severe behavioural problems. *J Ment Health Policy Econ* 2004;**7**:177–89	164
Hutchings J, Appleton P, Smith M, Lane E, Nash S. Evaluation of two treatments for children with severe behaviour problems: child behaviour and maternal mental health outcomes. *Behav Cogn Psychoth* 2002;**30**:279–95	165
Nansel TR, Anderson BJ, Laffel LMB, Simons-Morton BG, Weissberg-Benchell J, Wysocki T, *et al.* A multisite trial of a clinic-integrated intervention for promoting family management of pediatric type 1 diabetes: feasibility and design. *Pediatr Diabetes* 2009;**10**:105–15	166
Ng D, Chow P, Lai W, Chan K, Chang B, So H. Effect of a structured asthma education program on hospitalized asthmatic children: A randomized controlled study. *Pediatr Int* 2006;**48**:158–62	167
O'Neill D, McGilloway S, Donnelly M, Bywater T, Kelly P. A cost-effectiveness analysis of the Incredible Years parenting programme in reducing childhood health inequalities. *Eur J Health Econ* 2013;**14**:85–94	168
McGilloway S, Ni Mhaille G, Bywater T, Furlong M, Leckey Y, Kelly P, *et al.* A parenting intervention in childhood behavioural problems: a randomized controlled trial in disadvantaged community-based settings. *J Consult Clin Psych* 2012;**80**:116–27	169
Otsuki M, Eakin MN, Rand CS, Butz AM, Hsu VD, Zuckerman IH, *et al.* Adherence feedback to improve asthma outcomes among inner-city children: a randomized trial. *Pediatrics* 2009;**124**:1513–21	170
Quint DM, Teach SJ. IMPACT DC: reconceptualizing the role of the emergency department for urban children with asthma. *Clin Pediatr Emerg Med* 2009;**10**:115–21	171
Teach SJ, Crain EF, Quint DM, Hylan ML, Joseph JG. Improved asthma outcomes in a high-morbidity pediatric population: results of an emergency department-based randomized clinical trial. *Arch Pediat Adol Med* 2006;**160**:535–41	172
Richardson LP, Ludman E, McCauley E, Lindenbaum J, Larison C, Zhou C, *et al.* Collaborative care for adolescents with depression in primary care: a randomized clinical trial. *JAMA* 2014;**312**:809–16	173
Rikkers-Mutsaerts ER, Winters AE, Bakker MJ, van Stel HF, van der Meer V, de Jongste JC, *et al.* Internet-based self-management compared with usual care in adolescents with asthma: a randomized controlled trial. *Pediatr Pulmonol* 2012;**47**:1170–9	174
Ronchetti R, Indinnimeo L, Bonci E, Corrias A, Evans D, Hindi-Alexander M, *et al.* Asthma self-management programmes in a population of Italian children: a multicentric study. Italian Study Group on Asthma Self-Management Programmes. *Eur Respir J* 1997;**10**:1248–53	175
Rund BR, Moe L, Sollien T, Fjell A, Borchgrevink T, Hallert M, *et al.* The Psychosis Project: outcome and cost-effectiveness of a psychoeducational treatment programme for schizophrenic adolescents. *Acta Psychiatr Scand* 1994;**89**:211–18	176

Study	Reference number
Runge C, Lecheler J, Horn M, Tews JT, Schaefer M. Outcomes of a Web-based patient education program for asthmatic children and adolescents. *Chest* 2006;**129**:581–93	177
Schmidt U, Lee S, Beecham J, Perkins S, Treasure J, Yi I, *et al.* A randomized controlled trial of family therapy and cognitive behavior therapy guided self-care for adolescents with bulimia nervosa and related disorders. *Am J Psychiatry* 2007;**164**:591–8	178
Seid M, Varni JW, Gidwani P, Gelhard LR, Slymen DJ. Problem-solving skills training for vulnerable families of children with persistent asthma: report of a randomized trial on health-related quality of life outcomes. *J Pediatr Psychol* 2010;**35**:1133–43	179
Shames RS, Sharek P, Mayer M, Robinson TN, Hoyte EG, Gonzalez-Hensley F, *et al.* Effectiveness of a multicomponent self-management program in at-risk, school-aged children with asthma. *Ann Allergy Asthma Immunol* 2004;**92**:611–18	180
Sockrider MM, Abraham S, Brooks E, Caviness AC, Pilney S, Koerner C, *et al.* Delivering tailored asthma family education in a pediatric emergency department setting: a pilot study. *Pediatrics* 2006;**117**:S135–44	181
Southam-Gerow MA, Weisz JR, Chu BC, McLeod BD, Gordis EB, Connor-Smith JK. Does cognitive behavioral therapy for youth anxiety outperform usual care in community clinics? An initial effectiveness test. *J Am Acad Child Psy* 2010;**49**:1043–52	182
Staab D, von Rueden U, Kehrt R, Erhart M, Wenninger K, Kamtsiuris P, *et al.* Evaluation of a parental training program for the management of childhood atopic dermatitis. *Pediatr Allergy Immunol* 2002;**13**:84–90	183
Stevens CA, Wesseldine LJ, Couriel JM, Dyer AJ, Osman LM, Silverman M. Parental education and guided self-management of asthma and wheezing in the pre-school child: a randomised controlled trial. *Thorax* 2002;**57**:39–44	21
Sullivan SD, Weiss KB, Lynn H, Mitchell H, Kattan M, Gergen PJ, *et al.* The cost-effectiveness of an inner-city asthma intervention for children. *J Allergy Clin Immunol* 2002;**110**:576–81	184
Evans R III, Gergen PJ, Mitchell H, Kattan M, Kercsmar C, Crain E, *et al.* A randomized clinical trial to reduce asthma morbidity among inner-city children: results of the National Cooperative Inner-City Asthma Study. *J Pediatr* 1999;**135**:332–8	185
Svoren BM, Butler D, Levine BS, Anderson BJ, Laffel LM. Reducing acute adverse outcomes in youths with type 1 diabetes: a randomized, controlled trial. *Pediatrics* 2003;**112**:914–22	186
Szczepanski R, Gebert N, Hümmelink R, Könning J, Schmidt S, Runde B, *et al.* [Outcome of structured asthma education in childhood and adolescence.] *Pneumologie* 1996;**50**:544–8	187
Toelle BG, Peat JK, Salome CM, Mellis CM, Bauman AE, Woolcock AJ. Evaluation of a community-based asthma management program in a population sample of schoolchildren. *Med J Aust* 1993;**158**:742–6	188
Valery PC, Masters IB, Taylor B, Laifoo Y, O'Rourke PK, Chang AB. An education intervention for childhood asthma by Aboriginal and Torres Strait Islander health workers: a randomised controlled trial. *Med J Australia* 2010;**192**:574–9	189
Van de Wiel NMH, Matthys W, Cohen-Kettenis P, van Engeland H. Application of the Utrecht Coping Power Program and care as usual to children with disruptive behavior disorders in outpatient clinics: A comparative study of cost and course of treatment. *Behav Ther* 2003;**34**:421–36	190
Van Der Veek SMC, Derkx BHF, Benninga MA, Boer F, De Haan E. Cognitive behavior therapy for pediatric functional abdominal pain: a randomized controlled trial. *Pediatrics* 2013;**132**:e1163–e72	191
Velsor-Friedrich B, Militello LK, Richards MH, Harrison PR, Gross IM, Romero E, *et al.* Effects of coping-skills training in low-income urban African-American adolescents with asthma. *J Asthma* 2012;**49**:372–9	192
Walders N, Kercsmar C, Schluchter M, Redline S, Kirchner HL, Drotar D. An interdisciplinary intervention for undertreated pediatric asthma. *Chest* 2006;**129**:292–9	193
Watson WT, Gillespie C, Thomas N, Filuk SE, McColm J, Piwniuk MP, *et al.* Small-group, interactive education and the effect on asthma control by children and their families. *CMAJ* 2009;**181**:257–63	194
Weisz JR, Southam-Gerow MA, Gordis EB, Connor-Smith JK, Chu BC, Langer DA, *et al.* Cognitive-behavioral therapy versus usual clinical care for youth depression: an initial test of transportability to community clinics and clinicians. *J Consult Clin Psych* 2009;**77**:383–96	195
Willems DCM, Joore MA, Hendriks JJE, Wouters EFM, Severens JL. Cost-effectiveness of a nurse-led telemonitoring intervention based on peak expiratory flow measurements in asthmatics: results of a randomised controlled trial. *Cost Eff Resour Alloc* 2007;**5**(10)	196

Study	Reference number
Willems DC, Joore MA, Hendriks JJ, van Duurling RA, Wouters EF, Severens JL. Process evaluation of a nurse-led telemonitoring programme for patients with asthma. *J Telemed Telecare* 2007;**13**:310–17	197
Willems DC, Joore MA, Hendriks JJ, Nieman FH, Severens JL, Wouters EF. The effectiveness of nurse-led telemonitoring of asthma: results of a randomized controlled trial. *J Eval Clin Pract* 2008;**14**:600–9	198
Xu C, Jackson M, Scuffham PA, Wootton R, Simpson P, Whitty J, *et al.* A randomized controlled trial of an interactive voice response telephone system and specialist nurse support for childhood asthma management. *J Asthma* 2010;**47**:768–73	199
Young NL, Foster AM, Parkin PC, Reisman J, MacLusky I, Gold M, *et al.* Assessing the efficacy of a school-based asthma education program for children: a pilot study. *Can J Public Health* 2001;**92**:30–4	200

Appendix 4 Excluded studies list

Study ID	Reason for exclusion
Agras WS, Lock J, Brandt H, Bryson SW, Dodge E, Halmi KA, *et al.* Comparison of 2 family therapies for adolescent anorexia nervosa: a randomized parallel trial. *JAMA Psychiatry* 2014;**71**:1279–86	Absent/ineligible comparator
Allen HF, Yarnie S, Murray MA, Reiter EO. Personnel costs and perceived benefit of telephone care in the management of children with type 1 diabetes. *Pediatr Diabetes* 2002;**3**:95–100	Ineligible intervention
Al-sheyab N, Gallagher R, Crisp J, Shah S. Peer-led education for adolescents with asthma in Jordan: a cluster-randomized controlled trial. *Pediatrics* 2012;**129**:e106–12	No eligible economic outcomes
Andrade WCC, Camargos P, Lasmar L, Bousquet J. A pediatric asthma management program in a low-income setting resulting in reduced use of health service for acute asthma. *Allergy* 2010;**65**:1472–7	No eligible health outcomes
Arga M, Sahbaz H, Bakirtas A, Turktas I, Demirsoy MS. Does self-monitoring by means of symptom diaries improve asthma control in children? *J Asthma* 2014;**51**:299–305	Ineligible intervention
Asarnow JR, Jaycox LH, Duan N, LaBorde AP, Rea MM, Murray P, *et al.* Effectiveness of a quality improvement intervention for adolescent depression in primary care clinics: a randomized controlled trial. *JAMA* 2005;**293**:311–19	Ineligible intervention
Asarnow JR, Jaycox LH, Tang L, Duan N, LaBorde AP, Zeledon LR, *et al.* Long-term benefits of short-term quality improvement interventions for depressed youths in primary care. *Am J Psychiatry* 2009;**166**:1002–10	Ineligible intervention
Au A, Lau K-M, Wong AH-C, Lam C, Leung C, Lau J, *et al.* The efficacy of a group Triple P (positive parenting program) for Chinese parents with a child diagnosed with ADHD in Hong Kong: a pilot randomised controlled study. *Aust Psychol* 2014;**49**:151–62	No eligible economic outcomes
Bartholomew LK, Sockrider M, Abramson S, Swank PR, Czyzewski D, Tortolero SR, *et al.* Partners in school asthma management: evaluation of a self-management program for children with asthma. *J Sch Health* 2006;**76**:283–90	No clinical diagnosis, ineligible intervention
Beebe A, Gelfand EW, Bender B. A randomized trial to test the effectiveness of art therapy for children with asthma. *J Allergy Clin Immunol* 2010;**126**:263–6	No eligible economic outcomes
Bhaumik U, Norris K, Charron G, Walker SP, Sommer SJ, Chan E, *et al.* A cost analysis for a community-based case management intervention program for pediatric asthma. *J Asthma* 2013;**50**:310–17	No eligible health outcomes
Bodden DHM, Dirksen CD, Bogels SM, Nauta MH, De Haan E, Ringrose J, *et al.* Costs and cost-effectiveness of family CBT versus individual CBT in clinically anxious children. *Clin Child Psychol Psychiatry* 2008;**13**:543–64	Absent/ineligible comparator
Boogerd EA, Noordam C, Kremer JA, Prins JB, Verhaak CM. Teaming up: feasibility of an online treatment environment for adolescents with type 1 diabetes. *Pediatr Diabetes* 2014;**15**:394–402	No eligible economic outcomes
Bowen F. Asthma education and health outcomes of children aged 8 to 12 years. *Clin Nurs Res* 2013;**22**:172–85	No eligible economic outcomes
Brandao HV, Cruz CM, Santos Ida S Jr, Ponte EV, Guimaraes A, Augusto Filho A. Hospitalizations for asthma: impact of a program for the control of asthma and allergic rhinitis in Feira de Santana, Brazil. *J Bras Pneumol* 2009;**35**:723–9	Ineligible population, adult/child data mixed
Brandt S, Gale S, Tager I. The value of health interventions: evaluating asthma case management using matching. *Appl Econ* 2012;**44**:2245–63	No eligible health outcomes
Brandt S, Gale S, Tager I. *Estimation of Treatment Effect of Asthma Case Management Using Propensity Score Methods*. Amherst, MA: University of Massachusetts, Department of Resource Economics; 2009	No eligible health outcomes
Bratton DL, Price M, Gavin L, Glenn K, Brenner M, Gelfand EW, *et al.* Impact of a multidisciplinary day program on disease and healthcare costs in children and adolescents with severe asthma: a two-year follow-up study. *Pediatr Pulmonol* 2001;**31**:177–89	Absent/ineligible comparator

Study ID	Reason for exclusion
Brent DA, Holder D, Kolko D, Birmaher B, Baugher M, Roth C, *et al.* A clinical psychotherapy trial for adolescent depression comparing cognitive, family and supportive therapy. *Arch Gen Psychiatry* 1997;**54**:877–85	No eligible economic outcomes
Brent DA, Kolko DJ, Birmaher B, Baugher M, Bridge J. A clinical trial for adolescent depression: predictors of additional treatment in the acute and follow-up phases of the trial. *J Am Acad Child Adolesc Psychiatry* 1999;**38**:263–70	No eligible economic outcomes
Brent DA, Holder D, Kolko D, Birmaher B, Baugher M, Roth C, *et al.* A clinical psychotherapy trial for adolescent depression comparing cognitive, family and supportive therapy. *Arch Gen Psychiatry* 1997;**54**:877–85	No eligible economic outcomes
Britto MT, Vockell AL, Munafo JK, Schoettker PJ, Wimberg JA, Pruett R, *et al.* Improving outcomes for underserved adolescents with asthma. *Pediatrics* 2014;**133**:e418–27	Absent/ineligible comparator
Broquet Ducret C, Verga ME, Stoky-Hess A, Verga J, Gehri M. [Impact of a small-group educational intervention for 4- to 12-year-old asthmatic children and their parents on the number of healthcare visits and quality of life.] *Arch Pediatr* 2013;**20**:1201–5	Absent/ineligible comparator
Brown MD, Reeves MJ, Meyerson K, Korzeniewski SJ. Randomized trial of a comprehensive asthma education program after an emergency department visit. *Ann Allergy Asthma Immunol* 2006;**97**:44–51	No eligible health outcomes
Bruzzese JM, Markman LB, Appel D, Webber M. An evaluation of open airways for schools: using college students as instructors. *J Asthma* 2001;**38**:337–42	Absent/ineligible comparator
Bruzzese JM, Evans D, Wiesemann S, Pinkett-Heller M, Levison MJ, Du YL, *et al.* Using school staff to establish a preventive network of care to improve elementary school students' control of asthma. *J Sch Health* 2006;**76**:307–12	Ineligible intervention
Bruzzese JM, Unikel L, Gallagher R, Evans D, Colland V. Feasibility and impact of a school-based intervention for families of urban adolescents with asthma: results from a randomized pilot trial. *Fam Process* 2008;**47**:95–113	No eligible economic outcomes
Buchner DA, Butt LT, De Stefano A, Edgren B, Suarez A, Evans RM. Effects of an asthma management program on the asthmatic member: patient-centered results of a 2-year study in a managed care organization. *Am J Manag Care* 1998;**4**:1288–97	No comparator; adult/child mixed data
Buelow JM, Johnson CS, Perkins SM, Austin JK, Dunn DW. Creating Avenues for Parent Partnership (CAPP): an intervention for parents of children with epilepsy and learning problems. *Epilepsy Behav* 2013;**27**:64–9	No eligible economic outcomes
Butz AM, Malveaux FJ, Eggleston P, Thompson L, Schneider S, Weeks K, *et al.* Use of community health workers with inner-city children who have asthma. *Clin Pediatr* 1994;**33**:135–41	Absent/ineligible comparator
Bynum A, Hopkins D, Thomas A, Copeland N, Irwin C. The effect of telepharmacy counseling on metered-dose inhaler technique among adolescents with asthma in rural Arkansas. *Telemed J E Health* 2001;**7**:207–17	No eligible economic outcomes
Bywater T, Hutchings J, Linck P, Whitaker C, Daley D, Yeo ST, *et al.* Incredible Years parent training support for foster carers in Wales: a multi-centre feasibility study. *Child Care Health Dev* 2011;**37**:233–43	Population
Cabral ALB, Carvalho WAF, Chinen M, Barbiroto RM, Boueri FMV, Martins MA. Are International Asthma Guidelines effective for low-income Brazilian children with asthma? *Eur Respir J* 1998;**12**:35–40	Study design
Catov JM, Marsh GM, Youk AO, Huffman VY. Asthma home teaching: two evaluation approaches. *Dis Manag* 2005;**8**:178–87	No eligible health outcomes
Charlton I, Charlton G, Broomfield J, Mullee MA. Audit of the effect of a nurse run asthma clinic on workload and patient morbidity in a general practice. *Br J Gen Pract* 1991;**41**:227–31	No eligible health outcomes
Chase HP, Crews KR, Garg S, Crews MJ, Cruickshanks KJ, Klingensmith G, *et al.* Outpatient management vs. in-hospital management of children with new-onset diabetes. *Clin Pediatr* 1992;**31**:450–6	Absent/ineligible comparator
Chen SH, Yeh KW, Chen SH, Yen DC, Yin TJ, Huang JL. The development and establishment of a care map in children with asthma in Taiwan. *J Asthma* 2004;**41**:855–61	No eligible health outcomes

Study ID	Reason for exclusion
Chen S-H, Huang J-L, Yeh K-W, Tsai Y-F. Interactive support interventions for caregivers of asthmatic children. *J Asthma* 2013;**50**:649–57	No eligible health outcomes
Chiang LC, Ma WF, Huang JL, Tseng LF, Hsueh KC. Effect of relaxation-breathing training on anxiety and asthma signs/symptoms of children with moderate-to-severe asthma: a randomized controlled trial. *Int J Nurs Stud* 2009;**46**:1061–70	Ineligible intervention
Clark NM, Feldman CH, Evans D, Levison MJ, Wasilewski Y, Mellins RB. The impact of health education on frequency and cost of health care use by low income children with asthma. *J Allergy Clin Immunol* 1986;**78**:108–15	No eligible health outcomes
Cottrell CK, Young GA, Creer TL, Holroyd KA, Kotses H. The development and evaluation of a self-management program for cystic fibrosis. *Pediatr Asthma Allergy Immunol* 1996;**10**:109–18	No eligible economic outcomes
Coughey K, Klein G, West C, Diamond JJ, Santana A, McCarville E, *et al.* The child asthma link line: a coalition-initiated, telephone-based, care coordination intervention for childhood asthma. *J Asthma* 2010;**47**:303–9	No eligible health outcomes
Creer TL, Backial M, Burns KL, Leung P, Marion RJ, Miklich DR, *et al.* Living with asthma. I. Genesis and development of a self-management program for childhood asthma. *J Asthma* 1988;**25**:335–62	Absent/ineligible comparator
Cummings CM, Fristad MA. Medications prescribed for children with mood disorders: effects of a family-based psychoeducation program. *Exp Clin Psychopharmacol* 2007;**15**:555–62	No eligible health outcomes
DePue JD, McQuaid EL, Koinis-Mitchell D, Camillo C, Alario A, Klein RB. Providence school asthma partnership: school-based asthma program for inner-city families. *J Asthma* 2007;**44**:449–53	Wrong study design
Ducharme FM, Zemek RL, Chalut D, McGillivray D, Noya FJD, Resendes S, *et al.* Written action plan in pediatric emergency room improves asthma prescribing, adherence, and control. *Am J Respir Crit Care Med* 2011;**183**:195–203	Ineligible intervention
Ellis DA, Naar-King S, Frey M, Templin T, Rowland M, Greger N. Use of multisystemic therapy to improve regimen adherence among adolescents with type 1 diabetes in poor metabolic control: a pilot investigation. *J Clin Psychol Med Settings* 2004;**11**:315–24	No eligible health outcomes
Ellis DA, Templin T, Naar-King S, Frey MA, Cunningham PB, Podolski CL, *et al.* Multisystemic therapy for adolescents with poorly controlled type I diabetes: stability of treatment effects in a randomized controlled trial. *J Consult Clin Psychol* 2007;**75**:168–74	No eligible health outcomes
Ellis D, Naar-King S, Templin T, Frey M, Cunningham P, Sheidow A, *et al.* Multisystemic therapy for adolescents with poorly controlled type 1 diabetes: reduced diabetic ketoacidosis admissions and related costs over 24 months. *Diabetes Care* 2008;**31**:1746–7	No eligible health outcomes
Ellis DA, Frey MA, Naar-King S, Templin T, Cunningham P, Cakan N. Use of multisystemic therapy to improve regimen adherence among adolescents with type 1 diabetes in chronic poor metabolic control: a randomized controlled trial. *Diabetes Care* 2005;**28**:1604–10	No eligible health outcomes
Ellis DA, Naar-King S, Frey M, Templin T, Rowland M, Cakan N. Multisystemic treatment of poorly controlled type 1 diabetes: effects on medical resource utilization. *J Pediatr Psychol* 2005;**30**:656–66	No eligible health outcomes
Enebrink P, Hogstrom J, Forster M, Ghaderi A. Internet-based parent management training: a randomized controlled study. *Behav Res Ther* 2012;**50**:240–9	No eligible economic outcomes
Fanelli A, Cabral ALB, Neder JA, Martins MA, Carvalho CRF. Exercise training on disease control and quality of life in asthmatic children. *Med Sci Sports Exerc* 2007;**39**:1474–80	Ineligible intervention
Findley SE, Thomas G, Madera-Reese R, McLeod N, Kintala S, Andres Martinez R, *et al.* A community-based strategy for improving asthma management and outcomes for preschoolers. *J Urban Health* 2011;**88**:85–99	Wrong study design
Fireman P, Friday GA, Gira C, Vierthaler WA, Michaels L. Teaching self-management skills to asthmatic children and their parents in an ambulatory care setting. *Pediatrics* 1981;**68**:341–8	Wrong study design
Fischl AF, Herman WH, Sereika SM, Hannan M, Becker D, Mansfield MJ, *et al.* Impact of a preconception counseling program for teens with type 1 diabetes (READY-Girls) on patient–provider interaction, resource utilization, and cost. *Diabetes Care* 2010;**33**:701–5	No eligible health outcomes

Study ID	Reason for exclusion
Fisher EB, Strunk RC, Sussman LK, Sykes RK, Walker MS. Community organization to reduce the need for acute care for asthma among African American children in low-income neighborhoods: the Neighborhood Asthma Coalition. *Pediatrics* 2004;**114**:116–23	No eligible health outcomes
Forsander GA, Sundelin J, Persson B. Influence of the initial management regimen and family social situation on glycemic control and medical care in children with type 1 diabetes mellitus. *Acta Paediatr* 2000;**89**:1462–8	No eligible health outcomes
Foster EM, Jones D, Conduct Problems Prevention Research Group. Can a costly intervention be cost-effective? An analysis of violence prevention. *Arch Gen Psychiatry* 2006;**63**:1284–91	Ineligible population
Foster EM. Costs and effectiveness of the fast track intervention for antisocial behavior. *J Ment Health Policy Econ* 2010;**13**:101–19	Ineligible population
Foulds JL, Vanderloo SE, Marks SD, Johnson JA. Healthcare costs for initial management of children with new-onset type 1 diabetes mellitus in central and northern Alberta. *Can J Diabetes* 2012;**36**:128–32	No eligible health outcomes
Franklin BE, Crisler SC Jr, Shappley R, Armour MM, McCommon DT, Ferry RJ Jr. Real-time support of pediatric diabetes self-care by a transport team. *Diabetes Care* 2014;**37**:81–7	Ineligible intervention
Garcia-Perez L, Perestelo-Perez L, Serrano-Aguilar P, Del Mar Trujillo-Martin M. Effectiveness of a psychoeducative intervention in a summer camp for children with type 1 diabetes mellitus. *Diabetes Educ* 2010;**36**:310–17	No eligible health outcomes
Geist R, Heinmaa M, Stephens D, Davis R, Katzman DK. Comparison of family therapy and family group psychoeducation in adolescents with anorexia nervosa. *Can J Psychiatry* 2000;**45**:173–8	Absent/ineligible comparator
Gerald LB, Redden D, Wittich AR, Hains C, Turner-Henson A, Hemstreet MP, *et al.* Outcomes for a comprehensive school-based asthma management program. *J Sch Health* 2006;**76**:291–6	No eligible health outcomes
Gerald LB, Redden D, Wittich AR, Hains C, Turner-Henson A, Hemstreet MP, *et al.* Outcomes for a comprehensive school-based asthma management program. *J Sch Health* 2006;**76**:291–6	Ineligible intervention
Gillies J, Barry D, Crane J, Jones D, MacLennan L, Pearce N, *et al.* A community trial of a written self management plant for children with asthma. *N Z Med J* 1996;**109**:30–3	Ineligible intervention
Greer D, Grasso DJ, Cohen A, Webb C. Trauma-focused treatment in a state system of care: is it worth the cost? *Adm Policy Ment Health Ment Health Serv Res* 2014;**41**:317–23	No eligible health outcomes
Greineder DK, Loane KC, Parks P. A randomized controlled trial of a pediatric asthma outreach program. *J Allergy Clin Immunol* 1999;**103**:436–40	No eligible health outcomes
Grey M, Boland EA, Davidson M, Li J, Tamborlane WV. Coping skills training for youth with diabetes mellitus has long-lasting effects on metabolic control and quality of life. *J Pediatr* 2000;**137**:107–13	No eligible economic outcomes
Griffiths JD, Martin PR. Clinical- versus home-based treatment formats for children with chronic headache. *Br J Health Psychol* 1996;**1**:151–66	No eligible economic outcomes
Grimes KE, Schulz MF, Cohen SA, Mullin BO, Lehar SE, Tien S. Pursuing cost-effectiveness in mental health service delivery for youth with complex needs. *J Ment Health Policy Econ* 2011;**14**:73–83	No eligible health outcomes
Guglani L, Havstad SL, Johnson CC, Ownby DR, Joseph CL. Effect of depressive symptoms on asthma intervention in urban teens. *Ann Allergy Asthma Immunol* 2012;**109**:237–42	No eligible economic outcomes
Gustafson D, Wise M, Bhatacharya A, Pulvermacher A, Shanovich K, Philips B, *et al.* The effects of combining web-based eHealth with telephone nurse case management for pediatric asthma control: a randomized controlled trial. *J Med Internet Res* 2012;**14**:41–59	No eligible economic outcomes
Halterman JS, Fagnano M, Tremblay PJ, Fisher SG, Wang H, Rand C, *et al.* Prompting Asthma Intervention in Rochester-Uniting Parents and Providers (PAIR-UP): a randomized trial. *JAMA Pediatrics* 2014;**168**:e141983	Ineligible intervention
Harish Z, Bregante AC, Morgan C, Fann CS, Callaghan CM, Witt MA, *et al.* A comprehensive inner-city asthma program reduces hospital and emergency room utilization. *Ann Allergy Asthma Immunol* 2001;**86**:185–9	No eligible health outcomes

Study ID	Reason for exclusion
Harrington R, Peters S, Green J, Byford S, Woods J, McGowan R. Randomised comparison of the effectiveness and costs of community and hospital based mental health services for children with behavioural disorders. *BMJ* 2000;**321**:1047–50	Absent/ineligible comparator
Honeycutt AA, Khavjou OA, Jones DJ, Cuellar J, Forehand RL. Helping the noncompliant child: an assessment of program costs and cost-effectiveness. *J Child Fam Stud* 2015;**24**:499–504	No eligible economic outcomes
Hudson A, Cameron C, Matthews J. The wide-scale implementation of a support program for parents of children with an intellectual disability and difficult behaviour. *J Intellect Dev Disabil* 2008;**33**:117–26	Ineligible population
Hui SHL, Leung TF, Ha G, Wong E, Li AM, Fok TF. Evaluation of an asthma management program for Chinese children with mild-to-moderate asthma in Hong Kong. *Pediatr Pulmonol* 2002;**33**:22–9	Wrong study design
Izquierdo R, Morin PC, Bratt K, Moreau Z, Meyer S, Ploutz-Snyder R, *et al.* School-centered telemedicine for children with type 1 diabetes mellitus. *J Pediatr* 2009;**155**:374–9	Ineligible intervention
Kamps AWA, Brand PLP, Kimpen JLL, Maille AR, Overgoor-Van De Groes AW, Van Helsdingen-Peek LCJAM, *et al.* Outpatient management of childhood asthma by paediatrician or asthma nurse: randomised controlled study with one year follow up. *Thorax* 2003;**58**:968–73	Ineligible intervention
Karnick P, Margellos-Anast H, Seals G, Whitman S, Aljadeff G, Johnson D. The pediatric asthma intervention: a comprehensive cost-effective approach to asthma management in a disadvantaged inner-city community. *J Asthma* 2007;**44**:39–44	No eligible health outcomes
Kelly CS, Morrow AL, Shults J, Nakas N, Strope GL, Adelman RD. Outcomes evaluation of a comprehensive intervention program for asthmatic children enrolled in Medicaid. *Pediatrics* 2000;**105**:1029–35	No eligible health outcomes
King CA, Klaus N, Kramer A, Venkataraman S, Quinlan P, Gillespie B. The youth-nominated support team-version ii for suicidal adolescents: a randomized controlled intervention trial. *J Consult Clin Psychol* 2009;**77**:880–93	No eligible economic outcomes
Laffel LM, Wentzell K, Loughlin C, Tovar A, Moltz K, Brink S. Sick day management using blood 3-hydroxybutyrate (3-OHB) compared with urine ketone monitoring reduces hospital visits in young people with T1DM: a randomized clinical trial. *Diabet Med* 2006;**23**:278–84	Ineligible intervention
Lara M, Ramos-Valencia G, Gonzalez-Gavillun JA, Lopez-Malpica F, Morales-Reyes B, Marin H, *et al.* Reducing quality-of-care disparities in childhood asthma: La red de asma infantil intervention in San Juan, Puerto Rico. *Pediatrics* 2013;**131**:S26–37	Wrong study design
Lawson ML, Cohen N, Richardson C, Orrbine E, Pham B. A randomized trial of regular standardized telephone contact by a diabetes nurse educator in adolescents with poor diabetes control. *Pediatr Diabetes* 2005;**6**:32–40	Ineligible intervention
Letz KL, Schlie AR, Smits WL. A randomized trial comparing peak expiratory flow versus symptom self-management plans for children with persistent asthma. *Pediatr Asthma Allergy Immunol* 2004;**17**:177–90	Ineligible intervention
Levy M, Heffner B, Stewart T, Beeman G. The efficacy of asthma case management in an urban school district in reducing school absences and hospitalizations for asthma. *J Sch Health* 2006;**76**:320–4	No eligible health outcomes
Lipman TH. Length of hospitalization of children with diabetes: effect of a clinical nurse specialist. *Diabetes Educ* 1988;**14**:41–3	No eligible health outcomes
Lock J, Le Grange D, Agras WS, Moye A, Bryson SW, Jo B. Randomized clinical trial comparing family-based treatment with adolescent-focused individual therapy for adolescents with anorexia nervosa. *Arch Gen Psychiatry* 2010;**67**:1025–32	Absent/ineligible comparator
Lynch FL, Dickerson JF, Saldana L, Fisher PA. Incremental net benefit of early intervention for preschool-aged children with emotional and behavioral problems in foster care. *Child Youth Serv Rev* 2014;**36**:213–19	Ineligible population
Mandhane PJ, McGhan SL, Sharpe HM, Wong E, Hessel PA, Befus AD, *et al.* A child's asthma quality of life rating does not significantly influence management of their asthma. *Pediatr Pulmonol* 2010;**45**:141–8	No eligible economic outcomes

Study ID	Reason for exclusion
Mangione-Smith R, Schonlau M, Chan KS, Keesey J, Rosen M, Louis TA, *et al.* Measuring the effectiveness of a collaborative for quality improvement in pediatric asthma care: does implementing the chronic care model improve processes and outcomes of care? *Ambul Pediatr* 2005;**5**:75–82	Ineligible intervention
Mann NP, Noronha JL, Johnston DI. A prospective study to evaluate the benefits of long-term self-monitoring of blood glucose in diabetic children. *Diabetes Care* 1984;**7**:322–6	No eligible health outcomes
Marrero DG, Vandagriff JL, Kronz K, Fineberg NS, Golden MP, Gray D, *et al.* Using telecommunication technology to manage children with diabetes: the Computer-Linked Outpatient Clinic (CLOC) study. *Diabetes Educ* 1995;**21**:313–19	Ineligible intervention
Massie J, Efron D, Cerritelli B, South M, Powell C, Haby MM, *et al.* Implementation of evidence based guidelines for paediatric asthma management in a teaching hospital. *Arch Dis Child* 2004;**89**:660–4	Ineligible intervention
McGorry PD, Edwards J. The feasibility and effectiveness of early intervention in psychotic disorders: the Australian experience. *Int Clin Psychopharmacol* 1998;**13**:S47–52	Ineligible population
McPherson AC, Glazebrook C, Forster D, James C, Smyth A. A randomized, controlled trial of an interactive educational computer package for children with asthma. *Pediatrics* 2006;**117**:1046–54	No eligible health outcomes
Meng YY, Pourat N, Cosway R, Kominski GF. Estimated cost impacts of law to expand coverage for self-management education to children with asthma in California. *J Asthma* 2010;**47**:581–6	Ineligible intervention
Mihalopoulos C, McGorry PD, Carter RC. Is phase-specific, community-oriented treatment of early psychosis an economically viable method of improving outcome. *Acta Psychiatr Scand* 1999;**100**:47–55	Ineligible intervention
Moran G, Fonagy P, Kurtz A, Bolton A, Brook C. A controlled study of the psychoanalytic treatment of brittle diabetes. *J Am Acad Child Adolesc Psychiatry* 1991;**30**:926–35	No eligible health outcomes
Murphy HR, Wadham C, Hassler-Hurst J, Rayman G, Skinner TC, Families and Adolescents Communication and Teamwork Study (FACTS) Group. Randomized trial of a diabetes self-management education and family teamwork intervention in adolescents with type 1 diabetes. *Diabet Med* 2012;**29**:e249–54	No eligible economic outcomes
Nelson KA, Highstein GR, Garbutt J, Trinkaus K, Fisher EB, Smith SR, *et al.* A randomized controlled trial of parental asthma coaching to improve outcomes among urban minority children. *Arch Pediatr Adolesc Med* 2011;**165**:520–6	No eligible health outcomes
Ngo VK, Asarnow JR, Lange J, Jaycox LH, Rea MM, Landon C, *et al.* Outcomes for youths from racial-ethnic minority groups in a quality improvement intervention for depression treatment. *Psychiatr Serv* 2009;**60**:1357–64	Ineligible intervention
Nguyen KH, Boulay E, Peng J. Quality-of-life and cost–benefit analysis of a home environmental assessment program in Connecticut. *J Asthma* 2011;**48**:147–55	Wrong study design
Nunn E, King B, Smart C, Anderson D. A randomized controlled trial of telephone calls to young patients with poorly controlled type 1 diabetes. *Pediatr Diabetes* 2006;**7**:254–9	No eligible economic outcomes
Oishi T, Narita M, Morisawa Y, Watanabe H, Fukuie T, Akashi M, *et al.* The written action plan in childhood asthma can reduce unscheduled physician visits. *Allergy* 2013;**68**:377	Ineligible intervention
Patel B, Sheridan P, Detjen P, Donnersberger D, Gluck E, Malamut K, *et al.* Success of a comprehensive school-based asthma intervention on clinical markers and resource utilization for inner-city children with asthma in Chicago: the Mobile C.A.R.E. Foundation's asthma management program. *J Asthma* 2007;**44**:113–18	Ineligible intervention
Persaud DI, Barnett SE, Weller SC, Baldwin CD, Niebuhr V, McCormick DP. An asthma self-management program for children, including instruction in peak flow monitoring by school nurses. *J Asthma* 1996;**33**:37–43	No eligible health outcomes
Polisena J, Tam S, Lodha A, Laporte A, Coyte PC, Ungar WJ. An economic evaluation of asthma action plans for children with asthma. *J Asthma* 2007;**44**:501–8	Ineligible intervention
Reagan MM, DeBaun MR, Frei-Jones MJ. Multi-modal intervention for the inpatient management of sickle cell pain significantly decreases the rate of acute chest syndrome. *Pediatr Blood Cancer* 2011;**56**:262–6	Ineligible intervention

Study ID	Reason for exclusion
Rhee H, Pesis-Katz I, Xing J. Cost benefits of a peer-led asthma self-management program for adolescents. *J Asthma* 2012;**49**:606–13	Absent/ineligible comparator
Rhee H, Belyea MJ, Hunt JF, Brasch J. Effects of a peer-led asthma self-management program for adolescents. *Arch Pediatr Adolesc Med* 2011;**165**:513–19	Absent/ineligible comparator
Robling M, McNamara R, Bennert K, Butler CC, Channon S, Cohen D, *et al.* The effect of the Talking Diabetes consulting skills intervention on glycaemic control and quality of life in children with type 1 diabetes: cluster randomised controlled trial (DEPICTED study). *BMJ* 2012;**344**:e2359	Ineligible intervention
Rushton A, Monck E, Leese M, McCrone P, Sharac J. Enhancing adoptive parenting: a randomized controlled trial. *Clin Child Psychol Psychiatry* 2010;**15**:529–42	Ineligible population
Sanders MR, Baker S, Turner KM. A randomized controlled trial evaluating the efficacy of Triple P Online with parents of children with early-onset conduct problems. *Behav Res Ther* 2012;**50**:675–84	No eligible economic outcomes
Schauerte G, Fendel T, Schwab S, Bredl C. [Children with bronchial asthma: effects of an integrated health-care programme.] *Pneumologie* 2010;**64**:73–80	Ineligible intervention
Schmidt S, Konning J, Szczepanski R, Hummelink R, Gebert N, Wahn U. [Cost effectiveness of asthma education in clinic and practice.] *Prav Rehabil* 1994;**6**:27–32	Ineligible intervention
Schneiderman-Walker J, Pollock SL, Corey M, Wilkes DD, Canny GJ, Pedder L, *et al.* A randomized controlled trial of a 3-year home exercise program in cystic fibrosis. *J Pediatrics* 2000;**136**:304–10	No eligible health outcomes
Schulze J, Riel B, Wolfraum B, Fischer S, Lecheler J, Hofmann D. [Improvement of the quality of life by asthma training.] *Prav Rehabil* 2000;**12**:91–8	Ineligible intervention
Scott S, Sylva K, Doolan M, Price J, Jacobs B, Crook C, *et al.* Randomised controlled trial of parent groups for child antisocial behaviour targeting multiple risk factors: the SPOKES project. *J Child Psychol Psychiatry* 2010;**51**:48–57	Ineligible population
Shah S, Peat JK, Mazurski EJ, Wang H, Sindhusake D, Bruce C, *et al.* Effect of peer led programme for asthma education in adolescents: cluster randomised controlled trial. *BMJ* 2001;**322**:583–5	Ineligible population
Sharac J, McCrone P, Rushton A, Monck E. Enhancing adoptive parenting: a cost-effectiveness analysis. *Child Adolesc Ment Health* 2011;**16**:110–15	Ineligible population
Sheidow AJ, Bradford WD, Henggeler SW, Rowland MD, Halliday-Boykins C, Schoenwald SK, *et al.* Treatment costs for youths receiving multisystemic therapy or hospitalization after a psychiatric crisis. *Psychiatr Serv* 2004;**55**:548–54	Ineligible intervention
Siminerio LM, Charron-Prochownik D, Banion C, Schreiner B. Comparing outpatient and inpatient diabetes education for newly diagnosed pediatric patients. *Diabetes Educ* 1999;**25**:895–906	No eligible health outcomes
Simon E, Dirksen C, Bogels S, Bodden D. Cost-effectiveness of child-focused and parent-focused interventions in a child anxiety prevention program. *J Anxiety Disord* 2012;**26**:287–96	Ineligible population
Simon E, Dirksen CD, Bogels SM. An explorative cost-effectiveness analysis of school-based screening for child anxiety using a decision analytic model. *Eur Child Adolesc Psychiatry* 2013;**22**:619–30	Ineligible population
Stallard P, Phillips R, Montgomery A, Spears M, Anderson R, Taylor J, *et al.* A cluster randomised controlled trial to determine the clinical effectiveness and cost-effectiveness of classroom-based cognitive–behavioural therapy (CBT) in reducing symptoms of depression in high-risk adolescents. *Health Technol Assess* 2013;**17**	Ineligible population
Suh DC, Shin SK, Voytovich RM, Zimmerman A. Economic impact of an asthma education programme on medical care utilisation. *Dis Manag Health Outcomes* 2000;**8**:159–70	Ineligible intervention
Sullivan SD, Lee TA, Blough DK, Finkelstein JA, Lozano P, Inui TS, *et al.* A multisite randomized trial of the effects of physician education and organizational change in chronic asthma care: cost-effectiveness analysis of the Pediatric Asthma Care Patient Outcomes Research Team II (PAC-PORT II). *Arch Pediatr Adolesc Med* 2005;**159**:428–34	Ineligible intervention

Study ID	Reason for exclusion
Tiberg I, Katarina SC, Carlsson A, Hallstrom I. Children diagnosed with type 1 diabetes: a randomized controlled trial comparing hospital versus home-based care. *Acta Paediatr* 2012;**101**:1069–73	No eligible health outcomes
Tieffenberg JA, Wood EI, Alonso A, Tossutti MS, Vicente MF. A randomized field trial of ACINDES: a child-centered training model for children with chronic illnesses (asthma and epilepsy). *J Urban Health* 2000;**77**:280–97	No eligible health outcomes
Tinkelman D, Wilson S. Asthma disease management: regression to the mean or better? *Am J Manag Care* 2004;**10**:948–54	No eligible health outcomes
Tolomeo C, Savrin C, Heinzer MM. Impact of asthma self-management on pediatric emergency department visits and hospitalizations. *J Asthma Allergy Educ* 2010;**1**:61–70	No eligible health outcomes
Turcotte DA, Alker H, Chaves E, Gore R, Woskie S. Healthy homes: in-home environmental asthma intervention in a diverse urban community. *Am J Pub Health* 2014;**104**:665–71	Wrong study design
von Sengbusch S, Müller-Godeffroy E, Häger S, Reintjes R, Hiort O, Wagner V. Mobile diabetes education and care: intervention for children and young people with type 1 diabetes in rural areas of northern Germany. *Diabet Med* 2006;**23**:122–7	Wrong study design
Wade SL, Walz NC, Carey J, McMullen KM, Cass J, Mark E, *et al.* A Randomized trial of teen online problem solving: efficacy in improving caregiver outcomes after brain injury. *Health Psychology* 2012;**31**:767–76	No eligible economic outcomes
Webb C, Hayes AM, Grasso D, Laurenceau J-P, Deblinger E. Trauma-focused cognitive behavioral therapy for youth: effectiveness in a community setting. *Psychol Trauma* 2014;**6**:555–62	No eligible health outcomes
Weiss B, Han S, Harris V, Catron T, Ngo VK, Caron A, *et al.* An independent randomized clinical trial of multisystemic therapy with non-court-referred adolescents with serious conduct problems. *J Consult ClinPsychol* 2013;**81**:1027–39	Ineligible population
Weng HC, Yuan BC, Su YT, Perng DS, Chen WH, Lin LJ, *et al.* Effectiveness of a nurse-led management programme for paediatric asthma in Taiwan. *J Paediatr Child Health* 2007;**43**:134–8	No eligible health outcomes
Wensley D, Silverman M. Peak flow monitoring for guided self-management in childhood asthma: a randomized controlled trial. *Am J Respir Crit Care Med* 2004;**170**:606–12	Ineligible intervention
Wesseldine LJ, McCarthy P, Silverman M. Structured discharge procedure for children admitted to hospital with acute asthma: a randomised controlled trial of nursing practice. *Arch Dis Child* 1999;**80**:110–14	No eligible health outcomes
Williams SG, Brown CM, Falter KH, Alverson CJ, Gotway-Crawford C, Homa D, *et al.* Does a multifaceted environmental intervention alter the impact of asthma on inner-city children? *J Natl Med Assoc* 2006;**98**:249–60	Ineligible intervention
Wilson SR, Yamada EG, Sudhakar R, Roberto L, Mannino D, Mejia C, *et al.* Occupational and environmental lung disease. A controlled trial of an environmental tobacco smoke reduction intervention in low-income children with asthma. *Chest* 2001;**120**:1709–22	Ineligible intervention
Wong SS, Nathan AM, de Bruyne J, Zaki R, Mohd Tahir SZ. Does a written asthma action plan reduce unscheduled doctor visits in children? *Indian J Pediatr* 2013;**80**:590–5	Ineligible intervention
Wysocki T, Harris MA, Buckloh LM, Mertlich D, Lochrie AS, Mauras N, *et al.* Randomized trial of behavioral family systems therapy for diabetes: maintenance of effects on diabetes outcomes in adolescents. *Diabetes Care* 2007;**30**:555–60	No eligible economic outcomes
Zatzick D, Russo J, Lord SP, Valery C, Wang J Berliner L *et al.* Collaborative care intervention targeting violence risk behaviors, substance use, and posttraumatic stress and depressive symptoms in injured adolescents a randomized clinical trial. *JAMA Pediatrics* 2014;**168**:532–9	Ineligible population

Appendix 5 Details of individual studies: context

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Atherly *et al.,* 2009[76]	USA	Unclear (minimum, 458; maximum, 524)	Cluster RCT	N/S	Asthma-related QoL (measure not specified) and number of days with asthma symptoms	ED visits and hospitalisations	Intervention costs and direct medical care costs used to calculate cost per symptom-free day
Bartholomew *et al.,* 2000[77]	USA	171	RCT	Yes	Functional status (FS II-R) and symptoms (Usherwood Symptom Questionnaire)	Hospitalisation and ED visits	No costs reported
Bird *et al.,* 2012[78]	Australia	295	Quasi-experimental	N/S	QoL (PAQLQ – for participants aged > 6 years)	ED visits, hospital admissions and hospital bed-days	Hospital service costs (including ED presentations, admissions and bed-days)
Brazil *et al.,* 1997[79]	Canada	50	Quasi-experimental	N/S	Number of asthma attacks	Scheduled physician visits, emergency or unscheduled physician visits and hospitalisations	No costs reported
Brown *et al.,* 2002[80]	USA	101	RCT	N/S	Number of symptom-free days and QoL (PAQLQ symptom subscale)	Medical visits for acute asthma exacerbations	No costs reported
Browning *et al.,* 2013[81]	UK	30	nRCT	N/S	Symptoms (BPRS) and global functioning (CGAS)	Length of hospital stay	No costs reported
Bruzzese *et al.,* 2011[82]	USA	345	RCT	N/S	QoL (PAQLQ), number of symptom days, night awakenings and days with activity restriction as a result of asthma	Acute medical visits, ED visits, hospitalisations and use of controller medication	No costs reported
Bryant-Stephens *et al.,* 2009[83]	USA	264	RCT	N/S	Daytime and night-time coughing and wheezing	ED visits, hospitalisations and medication usage	Intervention costs
Butz *et al.,* 2005;[84] and Walker *et al.,* 2008[85]	USA	221	Cluster RCT	Yes	QoL (PAQLQ) and asthma symptom severity	Hospitalisations, ED visits, preventative visits, specialty care visits and asthma medication use	Intervention costs

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Butz *et al.,* 2010[86]	USA	231	RCT	N/S	Number of symptom days/ nights, activity limitation and asthma symptom severity	ED visits, clinician visits, hospitalisations and pharmacy-based asthma medication use	No costs reported
Byford *et al.,* 1999;[87] and Harrington *et al.,* 1998[88]	UK	162	RCT	Yes	Suicidal ideation (SIQ), family functioning (FAD) and episodes of self-harm	Inpatient days, day patient days, intensive care days, outpatient attendance, GP visits, school doctor contacts, CPN contacts, counselling sessions, education contacts, social services contacts and voluntary service contacts	Health service costs, education costs, social services costs, residential care costs, voluntary services and intervention costs
Byford *et al.,* 2007;[89] and Goodyer *et al.,* 2007[90]	UK	208	RCT	Yes	Global functioning (HoNOSCA, CGAS and CGI-I), depressive symptoms (CDRS-R and MFQ), suicidality and self harm, and QoL (EQ-5D), QALYs	Hospitalisations, outpatient contacts, day patient contacts, ED visits, community care contacts, voluntary sector contacts, private sector contacts and social services contacts	Total health services costs (intervention costs, hospital service costs, community health service costs and medication), education costs, social services costs, voluntary sector services costs, private sector and social services costs
Byford *et al.,* 2007;[91] and Gowers *et al.,* 2007[92] and 2010[93]	UK	167	RCT	Yes	Eating disorder symptoms and severity (MRAOS, EDI-2) global functioning (HoNOSCA self-rated and clinician rated), depressive symptoms (MFQ) and family functioning (FAD)	Hospitalisations, outpatient appointments, day patient contacts, ED contacts, community contacts and social services contacts	Total costs (health service costs, social services costs, education costs and voluntary/private sector costs)
Calvo *et al.,* 2014[94]	Spain	55	RCT	Yes	Symptoms (PANSS) and global functioning (CGAS)	Hospital admissions, ED visits and antipsychotic usage	No costs reported
Cano-Garcinuño *et al.,* 2007[95]	Spain, Cuba and Uruguay	245	RCT	N/S	QoL (PAQLQ – Spanish version) and number of asthma attacks	Hospital admissions	No costs reported

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Carswell *et al.*, 1989[96]	UK	86	RCT	N/S	Daily symptom score	Visits to surgery, hospital visits and family practitioner home visits	Intervention costs (cost of nurse) and medication costs
Celano *et al.*, 2012[97]	USA	43	RCT	Yes	Asthma symptom days	ED visits and hospitalisations	No costs reported
Chan *et al.*, 2003[98]	USA	10	RCT	N/S	QoL (PAQLQ), symptom-free days and symptom diary score	ED visits, hospitalisations, unscheduled visits for asthma and medication use	No costs reported
Chan *et al.*, 2007[99]	USA	120	RCT	N/S	QoL (PAQLQ), symptom-free days and lung functioning	ED visits, hospitalisations, unscheduled acute visits and medication use	No costs reported
Christie *et al.*, 2014[100]	UK	362	Cluster RCT	Yes	Hypoglycaemic episodes, QoL (PedsQL – general and diabetes specific), and behaviour and well-being (SDQ), QALYs	Clinic utilisation/contacts with diabetes nurse specialists and diabetes teams, and hospitalisations	Intervention costs and health service costs
Cicutto *et al.*, 2005[101]	Canada	256	Cluster RCT	Yes	QoL (PAQLQ)	Urgent health-care visits (including ED visits, walk-in clinic and same-day physician visits) and follow-up visits	No costs reported
Cicutto *et al.*, 2013[102]	Canada	1316	Cluster RCT	Yes	QoL (PAQLQ)	ED visits, unscheduled physician office visits, walk-in clinics and unscheduled community clinic visits	No costs reported
Clark *et al.*, 2005[103]	China	639	Cluster RCT	N/S	Number of symptom days	Hospitalisations, ED visits and medicines use	No costs reported
Cowie *et al.*, 2002[104]	Canada	93	RCT	N/S	Night-time asthma symptoms (frequency) and QoL (PAQLQ)	ED visits, hospitalisations (including number of admissions and number of patients admitted), medication usage and number of intensive care admissions	No costs reported

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Domino *et al.,* 2008,[105] 2009;[106] March *et al.,* 2006[107] and 2009;[108] and Treatment for Adolescents with Depression Study Team, 2005[109]	USA	327	RCT	Yes	Depression symptoms [CDRS-R (used to calculate depression-free days and QALYs) and RADS], responder status (CGI-I), suicidal ideation (SIQ-Junior High School Version), QoL (PQ-LES-Q), health and social functioning (HoNOSCA) and remission rate	Service use (ED, hospitalisation, primary care, other medical visits, school-based services and criminal justice courts)	Total health-care costs [intervention costs (CBT, medication, medication management, adjunctive service and attrition prevention services, time and travel) and additional health-care services costs (service, time and travel)]
Donaldson *et al.,* 2005[110]	USA	39	RCT	Yes	Suicidal ideation (SIQ) and depressive symptoms (CES-D)	Hospitalisations and medication use (including percentage of adolescents taking medication and the number of sessions taking medication)	No costs reported
Dougherty *et al.,* 1998[111] and 1999[112]	Canada	63	RCT	N/S	Diabetes-related adverse events (e.g. hypoglycaemia)	Hospitalisations, clinic visits, ED visits, services used and medication use	Health service costs (hospital services, medication and physician contacts), parent costs (expenses and parental time cost)
Eakin *et al.,* 2012[113]	USA	321	RCT and cluster	N/S	Symptom-free days	Hospitalisations, ED visits and medication use	No costs reported
Edwards *et al.,* 2007;[114] and Hutchings *et al.,* 2007[115]	UK	153	RCT	N/S	Problem behaviour (ECBI, SDQ, Conners Abbreviated Parent/Teacher Rating Scale and Kendall Self-Control Rating Scale)	Health, social and special educational service use (CSRI)	Total costs [intervention costs (detailed), health service costs (primary care costs and hospital services costs), social services costs and special educational costs]
Espinoza-Palma *et al.,* 2009[116]	Chile	88	RCT	Yes	Number of exacerbations	Hospitalisations, medication use and ED visits	No costs reported

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Esposito-Smythers *et al.,* 2011[117]	USA	40	RCT	Yes	Mental health symptoms (RADS-2, SCARED, BASC), suicide attempts (K-SADS-PL depression module), suicidal ideation (SIQ), global impairment (CIS) and alcohol/marijuana use (TLFB)	Hospitalisations, ED visits and number participants prescribed medication	No costs reported
Farber and Oliveria, 2004[118]	USA	56	RCT	Yes	Asthma severity (Asthma Functional Severity Scale)	ED visits, hospital admissions and medication use	No costs reported
Flapper *et al.,* 2008[119]	The Netherlands	36	RCT	Yes	QoL [DUX-25, TACQOL (generic version and asthma-specific version)] and number of asthma attacks	GP visits, ED visits, hospital visits, paediatrician visits and medication use	No costs reported
Flores *et al.,* 2009[120]	USA	220	RCT	Yes	Asthma symptoms, asthma exacerbations, QoL (PedsQL)	ED visits, hospitalisations and doctor visits	Intervention costs, health service costs (ED, hospitalisation, physician visit, home care, medical equipment costs and other asthma-related claims) and parental costs (income)
Foster *et al.,* 2007;[121] Swanson *et al.,* 2001;[122] Wells *et al.,* 2000;[123] Molina *et al.,* 2009;[124] Jensen *et al.,* 2005;[125] and the MTA Cooperative Group, 1999[126]	USA	579	RCT	Yes	Symptoms (SNAP), functional impairment (CIS), depression (CDI), anxiety (Multidimensional Anxiety Scale for Children), severity of delinquent behaviour, and aggression and conduct	Hospitalisations, medication use, school-based services and police services (SCAPI)	Total treatment costs (medication costs, medication visit costs and psychosocial therapy costs)
Franklin *et al.,* 2006[127]	UK	92	RCT	Yes	Acute complications (including diabetic ketoacidosis and severe hypoglycaemia)	Clinic visits and emergency hotline contacts	No costs reported

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Galbreath *et al.*, 2008[128]	USA	473	RCT	N/S	Asthma symptoms and QoL (PAQLQ)	Admissions, ED visits, urgent office visits and medication usage	No costs reported
Garbutt *et al.*, 2010[129]	USA	362	RCT	N/S	QoL (PAQLQ) and asthma symptoms	Urgent office visits, after-hours calls and ED visits	No costs reported
Godart *et al.*, 2012[130]	France	60	RCT	Yes	Eating disorder symptoms and severity (EDI, Morgan–Russell Outcome Category and GOAS)	Hospitalisations	No costs reported
Gorelick *et al.*, 2006[131]	USA	352	RCT	Yes	QoL (ITG-CASF)	ED visit, medication use and hospitalisations	No costs reported
Grainger-Rousseau and McElnay, 1996[132]	UK	152	RCT	Yes	QoL (QWB) and asthma symptoms (frequency)	Hospitalisations	No costs reported
Green *et al.*, 2011[133]	UK	366	RCT	Yes	Frequency and severity of self-harm, depressive symptoms (MFQ), suicidal ideation (SIQ) and global functioning (HoNOSCA)	Hospitalisations, CAMHS/ outpatient appointments, ED visits and community care/ social service contacts (GP, practice nurse, CPN, health visitor, psychologist, counselling, family therapist, drug and alcohol worker, dietitian, physiotherapist, occupational therapist, walk-in centre, social worker, support worker, school doctor and voluntary sector)	Health service costs (intervention costs, hospital costs, community health service costs and medication costs), social care costs, education costs, criminal justice service costs and costs to family/carers (including productivity losses)
Guendelman *et al.*, 2002[20] and 2004[134]	USA	134	RCT	Yes	Asthma symptoms, limitation in activity	Hospitalisations, ED visits and urgent calls to hospital	Intervention costs
Hederos *et al.*, 2009[135] and 2005[136]	Sweden	60	RCT	Yes	QoL (PAQLQ), asthma control (ACQ) and symptom exacerbations	Hospitalisation, emergency visits, outpatient visits (doctor and nurse) and telephone consultations	Cost in terms of parental sickleave

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Homer *et al.*, 2000[137]	USA	137	RCT	Yes	Asthma severity and functional status (CHQ-PF50)	ED visits and acute office visits	No costs reported
Horner and Brown, 2014[138]	USA	183	Cluster RCT	Yes	QoL (PAQLQ)	Hospitalisations and ED visits	No costs reported
Hughes *et al.*, 1991[139]	Canada	95	RCT	Yes	Asthma severity and symptoms	Clinic/GP/paediatrician visits, ED visits and hospitalisations	No costs reported
Husted *et al.*, 2014[140]	Denmark	71	RCT	Yes	Hypoglycaemic episodes and emotional well-being (WHO5)	Hospitalisations	No costs reported
Indinnimeo *et al.*, 1997[141]	Italy	120	RCT	N/S	Number of asthma episodes and children's level of anxiety (assessed by parents, measure not specified)	Number of emergency visits and number of patients admitted	None reported
Indinnimeo *et al.*, 2009[142]	Italy	123	nRCT	N/S	Number of asthma attacks	Medication use, GP and ED visits, and hospitalisations	No costs reported
Joseph *et al.*, 2007[143]	USA	314	RCT	N/S	Asthma symptoms (number of symptom days, symptom nights, days of restricted activity and days of changed plans), QoL[217]	ED visits and hospitalisations	Intervention cost (cost of referral co-ordinator)
Kamps *et al.*, 2008[144]	USA	15	RCT	N/S	QoL (PedsQL generic and asthma module)	None reported	Costs incurred by parents (expenses)
Kattan *et al.*, 2005;[145] and Morgan *et al.*, 2004[146]	USA	937	RCT	Yes	Asthma symptoms (days with symptoms, nights with disturbed sleep and days of limited play)	Health-care use (hospitalisations, ED visits, clinic visits) and medication use	Intervention costs and total direct medical costs
Katz *et al.*, 2004[147]	Canada	62	nRCT	Yes	Symptoms of depression, hopelessness and suicidal ideation (BDI, KHS and SIQ)	ED visits and hospitalisations	No costs reported

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Khan *et al.,* 2004[148] and 2003[149]	Australia	310	RCT	Yes	Number of days wheezing in the last 3 months and asthma attacks in the last 6 months	Use of preventer medication, number of visits to GP/ paediatricians, ED visits and hospital admissions with asthma in the previous 6 months	None reported
Krieger *et al.,* 2009;[150] and Sunshine *et al.,* 2011[151]	USA	309	RCT	N/S	Symptom-free days, activity limitation and number of asthma attacks	Urgent health care use (ED, hospital and clinic) and medication use	No costs reported
Krishna *et al.,* 2003[152] and 2006[153]	USA	246	RCT	Yes	Asthma symptoms (days with asthma symptoms, days of activity limitation and nights of disturbed sleep) and QoL (PAQLQ)	ED visits, hospitalisation (including duration of stay), urgent GP visits and medication use	No costs reported
Lewis *et al.,* 1984[154]	USA	103	RCT	N/S	Asthma severity (National Health Insurance Study System)	ED visits, hospitalisation (events and duration)	Intervention costs, cost of hospital stay and ED use
Lynch *et al.,* 2011;[155] Asarnow *et al.,* 2009;[156] and Brent *et al.,* 2008[157]	USA	334	RCT	Yes	Symptoms assessed at interview (CGI-I and CDRS-R), self-rated symptoms (BDI and SIQ-Junior version), functional status (CGAS), depression-free days, QALYs and depression-improvement days	Service use (including hospitalisation, ED visits and medication use)	Intervention costs, non-protocol services (health care and others) costs and costs incurred by parents
Madge *et al.,* 1997[158]	UK	201	RCT	N/S	Asthma symptoms days, and night and disability scores (Usherwood Index)	Hospitalisation, ED visits and GP visits	No costs reported
Maslennikova *et al.,* 1998[159]	Russia	252	RCT	N/S	Asthma symptom score	Visits to doctor and medication use	No costs reported
McGhan *et al.,* 2003[160]	Canada	162	Cluster RCT	N/S	QoL (PAQLQ and Childhood Asthma Pictorial Scale), asthma symptoms and asthma severity (parent rated)	Health-care use (unscheduled doctor visits and ED visits) and medication use	No costs reported

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
McGhan *et al.,* 2010[161]	Canada	266	Cluster RCT	N/S	QoL (PAQLQ) and global asthma ratings of change (including symptoms)	Health-care use (unscheduled doctor visits and ED visits) and medication use	No costs reported
Mehlum *et al.,* 2014[162]	Norway	77	RCT	Yes	Self-harm episodes, suicidal ideation (SIQ-junior version), depression (SMFQ, MADRS), hopelessness (BHS) and borderline symptoms (BSL)	Hospitalisations and ED visits	No costs reported
Mitchell *et al.,* 1986[163]	New Zealand	368	RCT	N/S	Severe asthma attacks (requiring more than treatment at home)	Hospitalisations (admissions, duration of stay) and medication use	No costs reported
Muntz *et al.,* 2004;[164] and Hutchings *et al.,* 2002[165]	UK	41	RCT	Yes	Child behaviour (CBCL) and general health (GHQ)	Health, educational and social service use (CSRI)	Health, educational and social service costs, costs to parents (loss of earnings) and intervention costs
Nansel *et al.,* 2009[166]	USA	122	RCT	Yes	QoL (PedsQL core generic module and diabetes module, DFRQ and DFCS), mental health (BYI and CDI) and episodes of hypoglycaemia requiring treatment	Hospitalisations and ED visits	No costs reported
Ng *et al.,* 2006[167]	China	100	RCT	N/S	Number of asthma attacks and number of nocturnal symptoms	Hospitalisations, ED visits and GP visits	Hospitalisation cost and intervention cost (nurse time)
O'Neill *et al.,* 2013;[168] and McGilloway *et al.,* 2012[169]	Ireland	149	RCT	N/S	Child problem behaviour (ECBI), behaviour and well-being (SDQ), hyperactive inattentive behaviour (CAPRS) and child social functioning (SCS)	Health, educational and social service use (CSRI)	Health service costs and intervention costs

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Otsuki *et al.*, 2009[170]	USA	250	RCT	N/S	Asthma symptoms and night-time awakenings	Hospitalisations, ED visits and medication use	No costs reported
Quint and Teach, 2009;[171] and Teach *et al.*, 2006[172]	USA	488	RCT	Yes	Asthma QoL (measure from Bukstein *et al.*[218]) and asthma symptoms (NCICAS)	Hospitalisations, ED visits, medication use and GP visits	No costs reported
Richardson *et al.*, 2014[173]	USA	101	RCT	Yes	Symptoms (Patient Health Questionnaire and CDRS-R) and functional status (CIS)	ED visits and psychiatric hospitalisation	Intervention costs
Rikkers-Mutsaerts *et al.*, 2012[174]	The Netherlands	90	RCT	Yes	QoL (PAQLQ), and asthma symptoms and control (ACQ, symptom-free days and exacerbations)	Physician visits and medication use	No costs reported
Ronchetti *et al.*, 1997[175]	Italy	312	RCT	N/S	Number of asthma attacks	Emergency treatment, hospitalisations and medication use	No costs reported
Rund *et al.*, 1994[176]	Norway	24	Quasi-experimental	N/S	Relapses and psychosocial functioning (GAS)	Hospitalisation	Direct costs (inpatient treatment, home visits, consultations with medical doctor/ psychologist, social welfare services and seminars for parents)
Runge *et al.*, 2006[177]	Germany	358	Quasi-experimental	N/S	QoL (KINDL®)	Hospitalisations, visits to GP or specialist, ED visits and use of rescue medication	Direct medical costs (health-care services and intervention), direct non-medical costs (transportation and internet) and indirect costs (loss of workdays)

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Schmidt *et al.*, 2007[178]	UK	85	RCT	Yes	Eating disorder symptoms (EATATE) and short evaluation of eating disorders	Health service use (CSRI)	Intervention costs, public sector services costs (education, hospital, primary care, specialist services, medication and social care), and family and patient costs (lost employment and out-of-pocket expenses)
Seid *et al.*, 2010[179]	USA	252	RCT	Yes	Child-reported and parent-reported QoL (PedsQL 4.0), and asthma symptoms (PedsQL 3.0 asthma module) day and night	ED visits, hospitalisation or urgent doctor service use	No costs reported
Shames *et al.*, 2004[180]	USA	119	RCT	Yes	Asthma symptoms and symptom days, asthma attacks and QoL (CHSA)	ED visits, hospitalisations and unscheduled physician visits	No costs reported
Sockrider *et al.*, 2006[181]	USA	464	RCT	Yes	Asthma symptoms and QoL (ITG-CASF)	ED visits, hospitalisations and well asthma visits	No costs reported
Southam-Gerow *et al.*, 2010[182]	USA	48	RCT	Yes	Symptoms (DISC version 4.0, STAIC-T, STAIC-P-T and CBCL)	Health service use (SACA)	Intervention costs
Staab *et al.*, 2002[183]	Germany	204	RCT	N/S	Eczema symptoms (SCORAD)	None reported	Direct treatment costs (medical consultation and prescriptions covered by public health insurance)
Stevens *et al.*, 2002[21]	UK	200	RCT	N/S	Asthma symptoms (IPSAC and symptom diaries)	GP visits, hospitalisations, ED visits and GP prescriptions written	Intervention costs

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Sullivan *et al.*, 2002;[184] and Evans *et al.*, 1999[185]	USA	1033	RCT	N/S	Asthma symptom days (wheeze, loss of sleep, and reduction in play activity caused by asthma)	Days in hospital (including intensive care unit), ED visits, scheduled and unscheduled clinic visits	Intervention costs and health-care costs
Svoren *et al.*, 2003[186]	USA	299	RCT	Yes	Hypoglycaemic events	ED visits and hospitalisation	No costs reported
Szczepanski *et al.*, 1996[187]	Germany	84	Quasi-experimental	N/S	Asthma symptoms and severity	Emergency visits to hospital, emergency visits to GP and hospitalisations	No costs reported
Toelle *et al.*, 1993[188]	Australia	132	nRCT	N/S	Asthma symptoms (wheeze, night cough and symptoms limiting activity)	Doctor or emergency room visits and medication use	No costs reported
Valery *et al.*, 2010[189]	Australia	113	RCT	N/S	QoL (PAQLQ), functional severity index and episodes of asthma	Hospital visits, doctor visits and hospitalisations	No costs reported
Van de Wiel *et al.*, 2003[190]	The Netherlands	77	RCT	N/S	Parent-reported behaviours (Parent Daily Report, Interview for Antisocial Behaviour, CBCL, MESSY) and teacher-reported behaviours (Child Behaviour Checklist – Teacher Report Form)	Use of inpatient psychiatric or residential care	Intervention cost
Van Der Veek *et al.*, 2013[191]	The Netherlands	104	RCT	Yes	QoL (KIDSCREEN-27), physical symptoms (Abdominal Pain Index and Children's Somatization Inventory), functional disability (Functional Disability Inventory), anxiety and depression (Revised Child Anxiety and Depression Scale), frequency and duration and intensity of pain	Health-care use	No costs reported

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Velsor-Friedrich *et al.*, 2012[192]	USA	137	Cluster-RCT	Yes	QoL (PAQLQ) and number of symptom days	ED visits, hospitalisations and use of rescue medicine	No costs reported
Walders *et al.*, 2006[193]	USA	175	RCT	Yes	Asthma symptoms (number of days with wheeze or asthma attack in previous month, symptom score) and QoL (CHSA)	ED visits and hospitalisations	No costs reported
Watson *et al.*, 2009[194]	Canada	398	RCT	Yes	QoL (PAQLQ)	ED visits, hospital admissions and use of oral corticosteroid therapy for exacerbations of asthma	No costs reported
Weisz *et al.*, 2009[195]	USA	57	RCT	Yes	Depression symptoms [DISC (version 4.0), CDI, CDI Parent Form and CBCL]	Parent-reported service use (outpatient, inpatient and other) (SACA)	Intervention cost
Willems *et al.*, 2007[196,197] and 2008[198]	The Netherlands	56	RCT	Yes	QoL (PAQLQ and EQ-5D) and self-reported clinical symptoms (coughing, production of sputum and shortness of breath/ wheezing in morning and evening)	Medication use, contact with HCPs (GP, GP assistant, nurse practitioner, lung specialist, paediatrician and asthma nurse), ED visits and hospitalisation	Health-care costs (hospital care, GP, other HCPs, prescribed medication, professional home care and intervention), patient/family costs (over-the-counter medication, informal care) and costs of school absenteeism
Xu *et al.*, 2010[199]	Australia	121	RCT	N/S	QoL (PAQLQ and PedsQL)	Health-care utilisation (GP visits, ED presentations and hospital admissions) and use of oral steroid rescue	Health-care resource costs and intervention costs

Study (first author and year of publication)	Country	Baseline completion (*n*)	Design	Other LTCs excluded	Measures of effectiveness	Health utilisation outcomes	Costs
Young *et al.*, 2001[200]	Canada	32	nRCT	N/S	QoL (PAQLQ)	Use of health services (including doctor visits and days of hospitalisation)	No costs reported

ACQ, Asthma Control Questionnaire; BASC, Behavior Assessment Scale for Children; BDI, Beck Depression Inventory; BHS, Beck Hopelessness Scale; BPRS, Brief Psychiatric Rating Scale; BSL, Borderline Symptom List; BYI, Beck Youth Inventory; CAMHS, Child and Adolescent Mental Health Services; CAPRS, Conners Abbreviated Parent Rating Scale; CBCL, Child Behaviour Checklist; CDI, Children's Depression Inventory; CDRS-R, Children's Depression Rating Scale; CES-D, The Center for Epidemiologic Studies-Depression Scale; CGAS, Children's Global Assessment Scale; CGI-I, Clinical Global Impression Improvement Scale; CHQ-PF50, Child Health Questionnaire; CHSA, Children's Health Survey for Asthma; CIS, Columbia Impairment Scale; CPN, community psychiatric nurse; CSRI, Client Service Receipt Inventory; DFCS, Diabetes Family Conflict Scale; DFRQ, Diabetes Family Responsibility Questionnaire; DISC, Diagnostic Interview Schedule for Children; DUX-25, The Dutch Children TNO-AZL Quality-of-life Questionnaire; EATATE, Eating Disorder Interview; ECBI, Eyberg Child Behaviour Inventory; EDI, Eating Disorder Inventory; EDI-2, Eating Disorder Inventory-2; EQ-5D, EuroQol-5 Dimensions; FAD, McMaster Family Assessment Device; FS II-R, functional status measure; GAS, Global Assessment Scale; GHQ, General Health Questionnaire; GOAS, Global Outcome Assessment Scale; GP, general practitioner; HoNOSCA, Health of the Nation Outcome Scales for Children and Adolescents; IPSAC, Index of Perceived Symptoms in Asthmatic Children; ITG-CASF, Integrated Therapeutics Group Child Asthma Short Form; KHS, Kazdin Hopelessness Scale for Children; KIDSCREEN-27, health-related quality-of-life measure for children and adolescents; KINDL, Questionnaire for Measuring Health-Related Quality of Life in Children and Adolescents; K-SADS-PL, Schedule for Affective Disorders and Schizophrenia for School-Age Children – Present and Lifetime version; MADRS, Montgomery–Åsberg Depression Rating Scale; MESSY, Matson Evaluation of Social Skills with Youngsters; MFQ: Mood and Feelings Questionnaire; MRAOS, Morgan–Russell Average Outcome Scale; NCICAS, National Cooperative Inner-City Asthma Study; N/S, not specified; PANSS, Positive and Negative Syndrome Scale; PAQLQ, Paediatric Asthma Quality of Life Questionnaire; PedsQL, Paediatric Quality of Life Inventory; PQ-LES-Q, Paediatric Quality of Life Enjoyment and Satisfaction Questionnaire; QALY, quality-adjusted life-year; QWB, Quality of Wellbeing Scale; RADS, Reynolds Adolescent Depression Scale; RADS-2, Reynolds Adolescent Depression Scale-2; SACA, Service Assessment for Children and Adolescents; SCAPI, Services for Children and Adolescents-Parent Interview; SCARED, Screen for Child Anxiety Related Emotional Disorders; SCORAD: Severity of Eczema Index; SCS, Social Competence Scale; SDQ, Strengths and Difficulties Questionnaire; SIQ, Suicidal Ideation Questionnaire; SNAP, Swanson, Nolan and Pelham Rating Scale; SMFQ, Short Mood and Feelings Questionnaire; STAIC-P-T, State–Trait Anxiety Inventory for Children – Parent-Report, Trait version; STAIC-T, State–Trait Anxiety Inventory for Children – Trait version; TACQOL, TNO–AZL Children Quality of Life Questionnaire; TLFB, timeline follow-back; TNO–AZL Children Quality of Life Questionnaire; WHO5, World Health Organization-5 Scale.

Appendix 6 Details of individual studies: participants

Study (first author and year of publication)	LTC	Males (%)	Mean age (years)	Age category	% eligible patients not taking part
Atherly *et al.*, 2009[76]	Asthma	54.6	13.7	Adolescents	NR
Bartholomew *et al.*, 2000[77]	Asthma	65.5	10.9	Mixed	11.4
Bird *et al.*, 2012[78]	Asthma	60.3	5.3	Mixed	NR
Brazil *et al.*, 1997[79]	Asthma	70.0	9.5	Mixed	NR
Brown *et al.*, 2002[80]	Asthma	61.0[a]	4.3[a]	Children	29.9
Browning *et al.*, 2013[81]	Psychosis	53.3	16.9	Adolescents	0.0
Bruzzese *et al.*, 2011[82]	Asthma	29.6	15.1	Adolescents	27.5
Bryant-Stephens *et al.*, 2009[83]	Asthma	66.0	6.0	Mixed	NR
Butz *et al.*, 2005;[84] and Walker, 2008[85]	Asthma	62.0	8.0	Children	23.3
Butz *et al.*, 2010[86]	Asthma	60.6	8.0	Children	30.2
Byford *et al.*, 1999;[87] and Harrington *et al.*, 1998[88]	Self-harm	10.5	14.5	Mixed	43.8
Byford *et al.*, 2007;[89] and Goodyer *et al.*, 2007[90]	Depression	26.0	14 (median)	Adolescents	38.6
Byford *et al.*, 2007;[91] and Gowers *et al.*, 2007[92] and 2010[93]	Anorexia nervosa	8.4	14.9	Adolescents	31.6
Calvo *et al.*, 2014[94]	Psychosis	61.8	16.5	Adolescents	36.8
Cano-Garcinuño *et al.*, 2007[95]	Asthma	64.8	11.0	Mixed	9.3
Carswell *et al.*, 1989[96]	Asthma	68.6	11.2	Mixed	24.6
Celano *et al.*, 2012[97]	Asthma	63.0	10.5	Mixed	77.4
Chan *et al.*, 2003[98]	Asthma	50.0	7.6	Mixed	NR
Chan *et al.*, 2007[99]	Asthma	62.5	9.6	Mixed	4.8
Christie *et al.*, 2014[100]	Diabetes	44.6[a]	13.2[a]	Mixed	73.0
Cicutto *et al.*, 2005[101]	Asthma	59.0	8.6	Children	13.8
Cicutto *et al.*, 2013[102]	Asthma	57.5	8.2	Children	47.4
Clark *et al.*, 2005[103]	Asthma	NR	NR	Children	NR
Cowie *et al.*, 2002[104]	Asthma	29.0[a]	17.2[a]	Adolescents	63.4
Domino *et al.*, 2008[105] and 2009;[106] March and Vitiello 2006[107] and 2009;[108] and the Treatment for Adolescents with Depression Study Team, 2005[109]	Depression	45.0	14.6	Adolescents	Unclear
Donaldson *et al.*, 2005[110]	Suicide attempt	17.9	15.0	Adolescents	11.4
Dougherty *et al.*, 1998[111] and 1999[112]	Diabetes	44.4	10.3	Mixed	0.0
Eakin *et al.*, 2012[113]	Asthma	53.3	4.0	Children	24.8
Edwards *et al.*, 2007;[114] and Hutchings *et al.*, 2007[115]	Conduct disorder	58.2	3.8	Children	6.7

Study (first author and year of publication)	LTC	Males (%)	Mean age (years)	Age category	% eligible patients not taking part
Espinoza-Palma *et al.*, 2009[116]	Asthma	62.5	8.0	Mixed	0.0
Esposito-Smythers *et al.*, 2011[117]	Suicidality	33.3[a]	15.7[a]	Adolescents	24.5
Farber and Oliveria 2004[118]	Asthma	NR	7.5	Mixed	NR
Flapper *et al.*, 2008[119]	Asthma	53.0	10.0	Children	26.5
Flores *et al.*, 2009[120]	Asthma	56.4	7.2	Mixed	35.5
Foster *et al.*, 2007;[121] Swanson *et al.*, 2001;[122] Wells *et al.*, 2000;[123] Molina *et al.*, 2009;[124] Jensen *et al.*, 2005;[125] and the MTA Cooperative Group, 1999[126]	ADHD	80.0	8.5	Children	Unclear
Franklin *et al.*, 2006[127]	Diabetes	53.8[a]	13.2[a]	Mixed	27.0
Galbreath *et al.*, 2008[128]	Asthma	59.4	9.5	Mixed	33.4
Garbutt *et al.*, 2010[129]	Asthma	61.9	7.8	Children	25.1
Godart *et al.*, 2012[130]	Anorexia nervosa	0.0	16.5	Adolescents	21.1
Gorelick *et al.*, 2006[131]	Asthma	65.5[a]	6.8[a]	Mixed	73.9
Grainger-Rousseau *et al.*, 1996[132]	Asthma	51.3	16.8	Adolescents	NR
Green *et al.*, 2011[133]	Self-harm	11.5	NR	Adolescents	7.1
Guendelman *et al.*, 2002[20] and 2004[134]	Asthma	57.5	12.1	Mixed	1.5
Hederos *et al.*, 2009[135] and 2005[136]	Asthma	60.0	2.3	Children	9.1
Homer *et al.*, 2000[137]	Asthma	69.3	7.4	Children	70.9
Horner and Brown, 2014[138]	Asthma	NR	8.8	Children	24.4
Hughes *et al.*, 1991[139]	Asthma	63.2	9.7	Mixed	57.6
Husted *et al.*, 2014[140]	Type 1 diabetes	39.4	14.8	Adolescents	47.8
Indinnimeo *et al.*, 1997[141]	Asthma	61.0	5.9	Children	NR
Indinnimeo *et al.*, 2009[142]	Asthma	58.5	8.8	Mixed	NR
Joseph *et al.*, 2007[143]	Asthma	36.6	15.3	Adolescents	73.9
Kamps *et al.*, 2008[144]	Asthma	66.7	9.0	Children	55.9
Kattan *et al.*, 2005;[145] and Morgan *et al.*, 2004[146]	Asthma	62.7	7.6	Children	5.7
Katz *et al.*, 2004[147]	Suicide attempts	16.1	15.4	Adolescents	NR
Khan *et al.*, 2004[148] and 2003[149]	Asthma	65.5	4.9	Mixed	33.8
Krieger *et al.*, 2009;[150] and Sunshine *et al.*, 2011[151]	Asthma	63.7	8.0	Children	55.0
Krishna *et al.*, 2003[152] and 2006[153]	Asthma	64.9[a]	NR	Mixed	1.2
Lewis *et al.*, 1984[154]	Asthma	68.5	10.3	Children	22.6
Lynch *et al.*, 2011;[155] Asarnow *et al.*, 2009;[156] and Brent *et al.*, 2008[157]	Depression	30.2	15.9	Adolescents	15.2
Madge *et al.*, 1997[158]	Asthma	61.7	I, 6; C, 4.23 (median)	Mixed	29.0
Maslennikova *et al.*, 1998[159]	Asthma	63.5	9.5	Mixed	31.5

Study (first author and year of publication)	LTC	Males (%)	Mean age (years)	Age category	% eligible patients not taking part
McGhan *et al.*, 2003[160]	Asthma	59.3	NR	Children	74.9
McGhan *et al.*, 2010[161]	Asthma	62.4	8.6	Children	7.3
Mehlum *et al.*, 2014[162]	Suicidal/self-harm behaviour	11.7	15.6	Adolescents	59.3
Mitchell *et al.*, 1986[163]	Asthma	59.8	5.8	Mixed	NR
Muntz *et al.*, 2004;[164] and Hutchings *et al.*, 2002[165]	Conduct disorder	85.4	6.0	Children	12.8
Nansel *et al.*, 2009[166]	Diabetes	NR	11.5	Mixed	26.9
Ng *et al.*, 2006[167]	Asthma	74.0	NR	Mixed	NR
O'Neill *et al.*, 2013;[168] and McGilloway *et al.*, 2012[169]	Behavioural	62.4	4.8	Children	NR
Otsuki *et al.*, 2009[170]	Asthma	62.0	7.0	Children	45.2
Quint and Teach, 2009;[171] and Teach *et al.*, 2006[172]	Asthma	63.9	NR	Mixed	6.3
Richardson *et al.*, 2014[173]	Depression	27.7	15.3	Adolescents	3.8
Rikkers-Mutsaerts *et al.*, 2012[174]	Asthma	49.8	13.6	Adolescents	86.9
Ronchetti *et al.*, 1997[175]	Asthma	64.0	9.6	Mixed	NR
Rund *et al.*, 1994[176]	Schizophrenia	66.7	16.0	Adolescents	NR
Runge *et al.*, 2006[177]	Asthma	64.0[a]	12.3[a]	Mixed	Unclear
Schmidt *et al.*, 2007[178]	Bulimia nervosa	2.4	17.6	Adolescents	38.8
Seid *et al.*, 2010[179]	Asthma	61.1	7.4	Mixed	26.7
Shames *et al.*, 2004[180]	Asthma	58.0	8.0	Children	NR
Sockrider *et al.*, 2006[181]	Asthma	63.4	6.6	Mixed	NR
Southam-Gerow *et al.*, 2010[182]	Anxiety	43.8	10.9	Mixed	63.4
Staab *et al.*, 2002[183]	Atopic dermatitis	NR	3.1[a]	Children	NR
Stevens *et al.*, 2002[21]	Asthma	67.0	2.7	Children	NR
Sullivan *et al.*, 2002;[184] and Evans *et al.*, 1999[185]	Asthma	64.1	7.6	Children	13.6
Svoren *et al.*, 2003[186]	Diabetes	43.6	11.9	Mixed	Unclear
Szczepanski *et al.*, 1996[187]	Asthma	NR	NR	Mixed	NR
Toelle *et al.*, 1993[188]	Asthma	68.8[a]	9.2[a]	Children	NR
Valery *et al.*, 2010[189]	Asthma	69.3[a]	7.0[a]	Mixed	3.4
Van de Wiel *et al.*, 2003[190]	Disruptive behaviour	88.3	10.1	Children	NR
Van Der Veek *et al.*, 2013[191]	Abdominal pain	27.9	11.9	Mixed	25.2
Velsor-Friedrich *et al.*, 2012[192]	Asthma	30.7	15.8	Adolescents	7.4
Walders *et al.*, 2006[193]	Asthma	72.0	7.3	Children	46.5
Watson *et al.*, 2009[194]	Asthma	66.8	7.4	Mixed	60.1
Weisz *et al.*, 2009[195]	Depression	44.0	11.8	Mixed	31.3

Study (first author and year of publication)	LTC	Males (%)	Mean age (years)	Age category	% eligible patients not taking part
Willems *et al.,* 2007[196,197] and 2008[198]	Asthma	64.3	10.7	Mixed	Unclear
Xu *et al.,* 2010[199]	Asthma	52.9	7.0	Mixed	46.0
Young *et al.,* 2001[200]	Asthma	NR	8.6 (asthma group only)	Children	27.3

ADHD, attention deficit hyperactivity disorder; C, control; I, intervention; NR, not reported.

a Studies reporting demographics on reduced sample (e.g. completers) only. Where age range for baseline/randomised sample not reported, age range categorisation is based on 'eligible' age range or other indicator (e.g. school 'grade' range).

Note

Values reported based on randomised sample wherever possible.

Appendix 7 Details of individual studies: interventions

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Atherly *et al.,* 2009[76]	School-based educational intervention 'Power Breathing'. Group sessions for CYP covering asthma education, asthma control strategies and development of constructive coping strategies	Usual care	Three 90-minute sessions
Bartholomew *et al.,* 2000[77]	An interactive multimedia computer game to enhance self-management skills, played by CYP while attending usual care asthma appointments. Written asthma plan also provided	Usual care	Before usual clinic appointments –schedule not reported
Bird *et al.,* 2012[78]	Participants allocated a care facilitator who assessed individual needs to develop an individual care plan (with multidisciplinary team), delivered self-management education and assisted with access to health and other services	Usual care (historical)	Four to seven sessions (no time length indicated)
Brazil *et al.,* 1997[79]	Day camp for CYP aimed at improving self-management skills and emotional adjustment. The programme incorporated sports, outdoor recreation, drama, creative activities and community outings, as well as formal sessions with physiotherapists (breathing techniques and energy conservation), nurses (education about medication) and social workers (social and emotional issues)	Inpatient programme: 3-month intensive programme for children. Parents received monthly teaching sessions with weekly reinforcement	3-week day camp
Brown *et al.,* 2002[80]	Home-based educational sessions aimed at parent and CYP. Subsequent sessions based on family's responses. Printed material, videos and homework	Usual care	Eight 90-minute sessions (median 10 weeks, range 1.9–24.4 weeks)
Browning *et al.,* 2013[81]	Two intervention groups: 1. CBT: standard care plus individual therapy by unit clinical psychologist with CYP involving assessment, formulation, work with psychotic symptoms, coping, reappraisal and validity testing 2. Family intervention: standard care plus family education about psychosis, focus on helping identify stressors and develop coping strategies	Usual care (medication, nursing care plan, group activity programme and on-site education)	1. CBT: 10 30-minute sessions (up to twice weekly) 2. Family intervention: four 60-minute sessions (over 4–10 weeks)

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Bruzzese *et al.,* 2011[82]	School-based educational intervention for CYP. Group sessions teaching asthma management skills and ways to cope with asthma plus encouragement to see medical providers. Individual sessions reinforced educational sessions and helped students identify and overcome barriers to management	Waiting list	Three 45- to 60-minute weekly group sessions, individual sessions once a week for 5 weeks
Bryant-Stephens *et al.,* 2009[83]	Educational home-based intervention aimed at families conducted by trained lay health educators covering asthma pathophysiology, recognition of symptoms, recognition and avoidance of triggers, appropriate treatment	Delayed intervention (crossover design study): control group received one visit each month for 6 months to collect asthma diaries and carry out bedroom assessments	Five sessions
Butz *et al.,* 2005;[84] and Walker *et al.,* 2008[85]	School/community library-based education intervention for groups of parents and children separately. Parents received a 1-hour education session covering early warning signs of asthma exacerbations, levels of asthma severity, avoidance of rural environmental exposures, types of asthma medications, how to obtain and use an asthma action plan and use of cue cards to communicate with their child's health-care provider. Interactive demonstrations. Quarterly newsletters. Children received 4 hours of interactive instruction aimed at appropriate developmental level, a peak flow meter, spacer device and colouring book	Usual care plus quarterly newsletter and written asthma guide	Parents: one 1-hour session; children: two 2-hour sessions
Butz *et al.,* 2010[86]	Asthma education (triggers, medication, device training, reducing barriers to regular asthma care), plus home-based communication skills training, assistance arranging clinician appointments, attendance by the nurse/health educator at the child's clinic visits and reinforcement of medication device technique from nurse/health educator	Asthma education only: delivered in three 30-minute home visits	Four 30-minute home visits

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Byford *et al.,* 1999;[87] and Harrington *et al.,* 1998[88]	Family focused home-based intervention. Action-oriented intervention was targeted towards intrafamilial communication, behavioural techniques and problem-solving	Usual care (routine psychiatric aftercare and no home-based family interventions)	Five sessions
Byford *et al.,* 2007;[89] and Goodyer *et al.,* 2007[90]	CBT for CYP in clinic setting	Usual care (fluoxetine and nine 30-minute outpatient visits over 28 weeks)	One 55-minute session weekly for 12 weeks plus six maintenance sessions every 2 weeks and a final session at 28 weeks
Byford *et al.,* 2007;[91] and Gowers *et al.,* 2007[92] and 2010[93]	Two intervention groups: 1. Inpatient psychiatric service – multidisciplinary psychiatric approach with the aim of normalising eating, restoring healthy weight and facilitating psychological (cognitive) change, individual supportive or cognitive therapies plus family therapy 2. Specialised outpatient treatment – this programme was manualised and devised for the trial, it comprised an initial motivational interview, individual CBT plus parental feedback (12 sessions), parental counselling with the patient (4–8 sessions), dietary therapy (4 sessions), multimodal feedback (weight, self-report and clinician-rated questionnaire) and monitoring (4 sessions)	Usual care (community mental health services)	1. Inpatient 6 weeks, extended as clinically appropriate 2. Outpatient regular sessions over 6 months
Calvo *et al.,* 2014[94]	Two groups: 1. CYP group intervention 2. Parent group intervention at outpatient clinic. The intervention involved structured sessions with written material – 12 chapters on medication, side effects and crisis management. The focus was on problem-solving strategies	Attention control (support groups for patients or parents, following same schedule as intervention, no written material and no structure)	(1) and (2): three 50-minute individual sessions, then 12 90-minute group sessions, every 15 days

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Cano-Garcinuño *et al.,* 2007[95]	Three intervention groups: 1. Group education for CYP 2. Group education for parents 3. Group education for both CYP and parents separately Sessions (6–10 participants per group) run by paediatricians or paediatric nurses at primary care centre, about asthma, treatment and management. Two-way dialogue, age-appropriate language, written materials and demonstration models	Not reported	Three 45- to 60-minute sessions, 2 weeks apart
Carswell *et al.,* 1989[96]	Nurses visited homes to discuss the child's asthma and treatment and appropriate methods of preventing or curtailing attacks	Usual care	Variable, based on judgement of family need by visiting nurse
Celano *et al.,* 2012[97]	Home-based family intervention. Trained asthma counsellors worked with families to identify challenges from baseline assessment, with goal-setting, family processes addressed and written action plans developed if necessary	Enhanced treatment as usual (one home visit – feedback on lung functioning and inhaler use and action plan)	Four to six home visits over a 4-month period
Chan *et al.,* 2003[98]	Internet-based education. All participants were given a home computer, camera and internet access and instructed in their use. CYP received education online via a website and recorded daily symptom diaries online. Case manager contact available at any time via telephone or e-mail	Office-based care: received education in office visits (same schedule as intervention) and recorded symptoms in hard-copy diary	Visits via website at 2 weeks, 6 weeks, 3 months and 6 months
Chan *et al.,* 2007[99]	Internet- and outpatient clinic-based intervention. CYP and parents received in-depth asthma education from the case manager, determined by an asthma educational pathway. Half of the visits were virtual via a study-provided home computer system, camera and internet access. Virtual visits included asthma education, a video recording of peak flow meter and inhaler use forwarded to the website, daily asthma diaries and communication with the case manager electronically via the website. Access was 24 hours/7 days to their case manager through the internet or telephone	Office-based care: as per intervention group, but all visits at clinic and case manager contact by telephone	Clinic visits at 0, 26 and 52 weeks. Virtual visits at 2, 6 and 12 weeks. Plus daily diary

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Christie *et al.,* 2014[100]	Structured group education intervention. CASCADE consists of four group education sessions (three or four families per group), led by a paediatric diabetes specialist nurse with another team member	Usual care	Average one session per month for 4 months
Cicutto *et al.,* 2005[101]	School-based intervention run by trained asthma educators. Roaring Adventures of Puff: asthma education, goal-setting, monitoring, medications and correct use of, lifestyle, managing asthma episode and sharing information with others. Child focused with parents attending last session. Teaching strategies including puppetry, role-playing, model building, homework, etc.	Usual care	Six 50- to 60-minute sessions over 6 weeks
Cicutto *et al.,* 2013[102]	School-based intervention run by trained asthma educators. Roaring Adventures of Puff: asthma education, goal-setting, monitoring, medications and correct use of, lifestyle, managing asthma episode and sharing information with others. Child focused with parents attending last session. Teaching strategies including puppetry, role-playing, model building, homework, etc. Plus Creating Asthma Friendly Schools resource kit for the broader school community	Usual asthma care: schools on waiting list for intervention	Six 50- to 60-minute sessions over 6 weeks
Clark *et al.,* 2005[103]	School-based CYP group intervention led by trained teachers. Open Airways for School programme, developed in the USA. 20–25 children grouped by age. Social cognitive theory/self-regulation focused. Sessions on asthma symptoms, triggers and management techniques. Teaching involved activities, homework to be completed with parents, games and discussion	Usual care	Five sessions over 5 weeks
Cowie *et al.,* 2002[104]	CYP group intervention at outpatient site. Inhalation technique assessed and instructions given. General asthma information and management. Action plan development. Adjustment of therapy where appropriate. Discussion of asthma in relation to career	Usual care (spirometry before and after bronchodilator; therefore, received instruction on inhaler technique)	90- to 120-minute session. Follow-up visit

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Domino *et al.,* 2008[105] and 2009;[106] March *et al.,* 2006[107] and 2009;[108] and Treatment for Adolescents with Depression Study Team, 2005[109]	CBT (alone, or with fluoxetine). CBT focused on cognitive restructuring, behavioural activations and behavioural family therapy. Individual sessions, parent-only sessions (two sessions) and family sessions (1–3 sessions)	Usual care (placebo or fluoxetine medication alone – six 20- to 30-minute medication visits)	Six 20- to 30-minute medication visits. CBT: 15 50- to 60-minute sessions over 12 weeks
Donaldson *et al.,* 2005[110]	Therapist-led individual therapy intervention with CYP at outpatient clinic. Parents attended the start of each session and family sessions if required. Intervention was a skills-based treatment focused on problem-solving and affect management skills. Each session included an assessment of suicidality, skill education and skill practice (both in-session and homework assignments)	Attention control (supportive relationship treatment on same schedule as intervention. Specific skills were not taught and homework assignments were not given)	Six individual sessions and one family session in first 3 months, then 3-monthly sessions (two additional family sessions and two crisis sessions if necessary)
Dougherty *et al.,* 1998[111] and 1999[112]	Home care at diagnosis from diabetes nurse. Visits once or twice for first 3 days after diagnosis to carry out flexible education sessions and supervise practical and theoretical aspects of treatment. Access to 24-hour telephone line to nurse/physician. Two clinic visits with diabetologist and dietitian. Flexible and paced at family's needs	Usual care (hospital inpatient treatment, then outpatient clinic)	One or two daily home visits for 3 days after diagnosis, then as required
Eakin *et al.,* 2012[113]	Three intervention groups: 1. Breathmobile – mobile asthma clinic 2. FACI – home visit from asthma educator to give caregiver asthma education and also teach communication skills to use when interacting with the child's PCP, educator also attended PCP visit with family and provided feedback 3. Breathmobile plus FACI	Usual care	1. Breathmobile: as many visits as wanted while on site 2. FACI: one home visit, one PCP visit
Edwards *et al.,* 2007;[114] and Hutchings *et al.,* 2007[115]	Community-based positive parenting group programme using role-playing, modelling, discussion and analysis of video material	Waiting list control	12 weekly 2.5-hour sessions

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Espinoza-Palma *et al.,* 2009[116]	Hospital-based self-management intervention in addition to the standard education programme (general education about aetiology, triggers, types, severity, treatment of asthma and correct use of spacers with inhalers plus booklet). The self-management intervention included written information, scenario-based teaching by a nurse and a puzzle game	Usual care (standard education programme, one 30-minute session while admitted to hospital)	One 30-minute session while admitted to hospital
Esposito-Smythers *et al.,* 2011[117]	Psychiatrist-led outpatient clinic-based integrated CBT intervention. This included individual sessions for CYP, plus family and parent training sessions	Enhanced treatment as usual (diagnostic evaluation report and medication management by study psychiatrist)	Weekly sessions for 6 months, biweekly sessions for 3 months then monthly sessions for 3 months
Farber and Oliveria, 2004[118]	Inpatient education and management intervention involving asthma education and discussion, a self-management plan, inhaler and medication. Follow-up telephone calls to reinforce asthma management skills	Usual care (referral back to community resources with no input from research staff)	Initial session during ED visit (or hospital stay if admitted from ED) then follow-up telephone calls at 1–2 weeks, 4–6 weeks and 3 months
Flapper *et al.,* 2008[119]	Group interventions for parents and children separately at outpatient clinic. Education–exercise programme for groups of 8–10 children. Education sessions for parents and teachers	Usual care	Children: 10-weekly 2.5-hour sessions, follow-up session at 6 months. Parents: five 1.5-hour education sessions every 2 weeks
Flores *et al.,* 2009[120]	Home- and community-based intervention with trained peer mentors supporting families with asthma self-management in terms of education, hospital appointments and other unmet health needs. 24-hour availability by telephone (additional cover by asthma nurse)	Usual care	Monthly family group meetings and telephone calls, two home visits over 12 months
Foster *et al.,* 2007;[121] Swanson *et al.,* 2001;[122] Wells *et al.,* 2000;[123] Molina *et al.,* 2009;[124] Jensen *et al.,* 2005;[125] and the MTA Cooperative Group, 1999[126]	Three intervention groups: 1. Behavioural treatment including parent training, child-focused treatment in a summer treatment programme and school-based intervention 2. Medication management 3. Combined treatments – both behavioural treatment and medication management	Usual care (in community)	1. Behavioural treatment: 27 group and eight individual sessions for parents, 8-week summer treatment programme for children (5 days a week, 9 hours a day), 12 weeks (60 days) school-based therapy 2. Medication management: 30-minute monthly medication maintenance visit

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Franklin *et al.,* 2006[127]	Two intervention groups: 1. Conventional insulin therapy plus 'Sweet Talk' text intervention 2. Intensive insulin therapy plus 'Sweet Talk' text intervention. Sweet Talk is a motivational support network using text messages through a mobile telephone to reinforce behaviours discussed at clinic. Participants were given a mobile phone and £10 phone card for the study All groups continued with usual care including 3- to 4-monthly clinic visits and access to an emergency hotline	Usual care (conventional insulin therapy, 3- to 4-monthly clinic visits and access to an emergency hotline)	Daily text message, plus weekly reminder of clinic goals and occasional newsletters
Galbreath *et al.,* 2008[128]	Two intervention groups: 1. Home-based DM – regular telephone calls with nurse practitioners to make written asthma plan, re-evaluated and further training provided as needs required and access to 24-hour advice line 2. Augmented DM – as DM but also home visits for education sessions and home evaluation	Usual care	1. Home-based DM: six or seven telephone calls 2. Augmented DM: six or seven telephone calls and four home visits
Garbutt *et al.,* 2010[129]	Telephone coaching programme providing education and support to parents to help with day-to-day management. Targeting four areas: 1. controller medication usage 2. how to treat asthma exacerbation 3. action plans 4. relationship with PCP	Usual care	First call within 2 weeks, then monthly calls but flexible depending on need, over 12 months
Godart *et al.,* 2012[130]	Outpatient clinic family therapy intervention in addition to usual care. Family therapy aimed to construct therapeutic alliance, identify areas of individual responsibility, support family, enable appropriate expression and management of conflict, develop patient's autonomy and restore sense of family identity	Usual care (individual consultations with psychiatrist, parent interviews and psychotherapy and nutritional advice if required)	1.5-hour sessions every 3–4 weeks for 18 months (flexible)

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Gorelick *et al.,* 2006[131]	Two intervention groups: 1. Primary care liaison – telephone reminders and assistance with organising PCP appointment 2. Primary care liaison plus a case manager who made home visits to conduct assessments of asthma needs, environment and smoking, identify and address personalised asthma goals, provide asthma education and tool kit and refer to community and other services as needed	Usual care (asthma education and discharge planning)	Telephone contact over 2 weeks, then case manager group received up to six home visits over 6 months
Grainger-Rousseau and McElnay, 1996[132]	Three community pharmacist-delivered intervention groups: 1. Education session on the use of inhaler devices, medication and asthma pathology 2. Monitoring of asthma – advice on use of peak flow meters and interpretation of charts (both provided to participants) 3. Both education session and monitoring advice	Usual care	Not reported
Green *et al.,* 2011[133]	Therapist-led outpatient intervention. Developmental group therapy based on CBT, dialectical behavioural therapy and group psychotherapy. Group goals based around peer relationships, bullying and family problems. Strategies were developed for these situations	Usual care (treatments as judged most appropriate, but excluding group interventions)	6-weekly sessions followed by weekly sessions as long as needed
Guendelman *et al.,* 2002,[20] 2004[134]	Education session (including instructions on using peak flow reading), plus Health Buddy (a personal and interactive communication device that connects to a home telephone). Nurse co-ordinator sends daily queries and the Health Buddy presents questions and records/processes responses. For use by children with parental supervision	Education session plus daily use of written asthma diary to record symptoms and peak flow	Daily use of Health Buddy for 90 days
Hederos *et al.,* 2009[135] and 2005[136]	Outpatient group sessions for parents in addition to usual care (basic education about asthma, medication guidance, written treatment plan). Group sessions had specific topics and involved teaching, dialogue and peer education and sharing of personal experiences	Usual care	Three 1.5-hour meetings soon after baseline, fourth meeting at 6 months

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Homer *et al.,* 2000[137]	Interactive educational computer program (Asthma Control) designed to teach about asthma and its management. Game with simulated daily events emphasising monitoring, allergen identification, use of medications, use of health services and maintenance of normal activity	Written asthma education materials (reviewed with research assistant) and non-educational computer game (three visits)	Three visits over 1 year
Horner and Brown, 2014[138]	Asthma self-management educational intervention for children and parents. Children were given group sessions during lunch break at school involving problem-solving exercises, activities to enhance coping, education (such as recognising symptoms and avoiding triggers) and practising inhaler technique. Parents received a home visit where they were given individualised family education. A written asthma action plan was completed and discussed with the parents	Attention-control intervention: same schedule as asthma self-management intervention but focused on general health promotion (e.g. nutrition, safely exercising, hygiene)	16 sequential sessions of 15 minutes duration (4 hours total), 3 days a week for 5.5 weeks
Hughes *et al.,* 1991[139]	Outpatient clinic and home-based intervention. Seen by same physician/nurse, individualised asthma plan, inhalation technique and trigger factors discussed, asthma teaching programme plus written information and home visits by nurse to discuss environmental factors	Usual care	3-monthly clinic visits, with more if required and two home visits over 1 year
Husted *et al.,* 2014[140]	Guided self-determination for adolescents and parents. Outpatient-based intervention. This is a life skills approach aimed at facilitating shared decision-making, and involved discussion of 'reflection sheets' completed by children and parents. Opportunity for joint adolescent–parent sessions, as well as individual sessions. Health-care providers could refer to dietitian depending on need	Usual care (eight sessions consisting of typical outpatient care including parental involvement as per intervention)	Eight 1-hour sessions scheduled over an 8- to 12-month period
Indinnimeo *et al.,* 1997[141]	Outpatient clinic-based asthma self-management education intervention for families, delivered before routine appointment. Education session followed by 30 minutes discussion. Plus usual care	Usual care	One session

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Indinnimeo *et al.,* 2009[142]	Outpatient clinic-based self-management education intervention for children and parents. Personalised treatment and symptom diary plus a 1-hour education session, then a 30-minute group discussion session. Education used age-targeted games	Usual care (including personalised treatment plan and symptom diary)	Two 1.5-hour sessions: one at baseline and one 2 months later
Joseph *et al.,* 2007[143]	Internet-based asthma management program (Puff City) focusing on three core behaviours: 1. controller medication adherence 2. rescue inhaler availability 3. smoking cessation/education Individualised to participants using information provided at baseline and during sessions	Access to existing asthma management websites, four sessions as per intervention group	Four sessions within 180 days of baseline
Kamps *et al.,* 2008[144]	Home-based education and behavioural intervention targeted at improving adherence to medication. Sessions involved focused education, monitoring, contingency management and discipline techniques. Interactive computer program and written materials used. Adherence data reviewed with children and parents	General asthma education programme (six 1-hour home-based sessions)	6-weekly 1-hour sessions
Kattan *et al.,* 2005;[145] and Morgan *et al.,* 2004[146]	Trained environmental counsellors made home visits to discuss six environmental modules including education and demonstration of environmental remediation techniques. Families were also given equipment to address environmental triggers	Usual care	Five visits (plus two optional visits) over 12 months
Katz *et al.,* 2004[147]	Inpatient therapy-based intervention. DBT – principle-based psychotherapy that attempts to change behaviours by balancing skills-enhancing change strategies with validation	Usual care (daily psychodynamic psychotherapy group, weekly individual psychotherapy)	10 daily DBT sessions over 2 weeks, plus twice weekly individual DBT psychotherapy review
Khan *et al.,* 2004,[148] 2003[149]	Education via telephone, in addition to usual care. Telephone consultation reviewed hospital care, in particular whether or not there was a written action plan, the medication prescribed and arrangements made for follow-up. Advice was reinforced	Usual care	One telephone consultation averaging 13 minutes (range 5–44 minutes) within 2 weeks of receipt of baseline data

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Krieger *et al.,* 2009;[150] and Sunshine *et al.,* 2011[151]	Home visits by CHW in addition to asthma education and support in clinic from asthma nurse. CHW developed protocol-driven client and CHW actions, assessed progress, reviewed asthma education and provided support, advocacy and equipment to reduce allergens in participants' homes. CHW and nurse communicated to co-ordinate care	Usual care (including asthma education and support in clinic with nurse, allergen-impermeable bedding encasements)	Five visits over a year
Krishna *et al.,* 2003[152] and 2006[153]	Interactive multimedia education intervention at usual care clinic visits (in waiting room before appointments). 44 short (1-minute) cartoons covering asthma education ending with game to find triggers in home environment. Programme tracks learners' progress and repeats information if not understood based on tests of knowledge. Interactive and provides immediate feedback	Usual care	At clinic visits (average 15–30 minutes per visit)
Lewis *et al.,* 1984[154]	Outpatient clinic-based group session intervention (A.C.T for Kids). Children and parents in different groups for the first 45 minutes, then together for last 15 minutes. Focus on children taking responsibility for their asthma management, input from asthma physician in third session. Asthma physiology, triggers, medication and decision-making skills. Groups of 5–7 children	Same content as intervention delivered in three 1.5-hour lectures held weekly (6–12 families)	5-weekly 1-hour sessions
Lynch *et al.,* 2011;[155] Asarnow *et al.,* 2009;[156] and Brent *et al.,* 2008[157]	CBT intervention in addition to family psychotherapy (three sessions, at start, and at 6 and 12 weeks) and medication change. There were CBT sessions for children alone and with parents	Family psychotherapy and medication change	Up to 12 CBT sessions over 12 weeks, 3–6 sessions including parents (mean 8.3 sessions)
Madge *et al.,* 1997[158]	Outpatient clinic-based intervention. Trained specialist asthma nurse delivered review discussion sessions, (highly visual) written information and advice, subsequent follow-up and telephone advice. Individual management plan agreed and provided on credit card-sized card. In addition to usual clinical care with paediatrician	Usual care	Visit within 24 hours then two 45-minute sessions

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Maslennikova *et al.,* 1998[159]	Outpatient-based group education intervention for parents and children separately. Asthma education sessions (using either the Open Airways or Air Power programme), focused on physiology, triggers, medication and handling problems. Designed to develop, enhance and encourage self-management skills. Plus asthma care and medication provided by research investigators	Usual care (with access to the same medication as the intervention group)	Four 1- to 1.25-weekly sessions
McGhan *et al.,* 2003[160]	Child-centred school-based education intervention. Roaring Adventures of Puff, designed using principles of social cognitive theory and appropriate child education approaches: asthma education, goal-setting, monitoring, medications, lifestyle, managing asthma episode and sharing information with others. Teaching strategies including puppetry, role-playing, model building, homework, etc. Parents attended last session and pre-intervention event	Usual care	Six 45- to 60-minute weekly sessions
McGhan *et al.,* 2010[161]	Child-centred school-based education intervention. Roaring Adventures of Puff, a programme designed using the principles of social cognitive theory and appropriate child education approaches: asthma education, goal-setting, monitoring, medications and correct use of, lifestyle, managing asthma episode and sharing information with others. Teaching strategies including puppetry, role-playing, model building, home work, etc. Parents attended last session and a pre-intervention information event	Usual care	Six 45- to 60-minute weekly sessions
Mehlum *et al.,* 2014[162]	Therapist-led outpatient clinic-based individual and family intervention. DBT for adolescents	Enhanced usual care (at least one weekly treatment session to match intervention frequency)	One 60-minute individual training session, one 120-minute family skills training session every week for 19 weeks (plus family therapy and telephone coaching if required)
Mitchell *et al.,* 1986[163]	Community-based, family focused home visit intervention. Child health nurse visits involved education about the pathophysiology of asthma, triggers, medication, a check of drug compliance and encouragement to attend follow-up treatment and communication with HCPs	Usual care	Monthly visits for 6 months

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Muntz *et al.,* 2004;[164] and Hutchings *et al.,* 2002[165]	Home- and clinic-based parent training intervention led by trained specialists. Intensive specialist unit-based intervention used video-taped recordings of parent–child interactions to give feedback to parent. Therapist used bug-in-the-ear equipment to deliver advice, praise and encouragement to parents during observations. All 10 behavioural strategies were used. Home visits were used to help parents generalise skills to the home situation	Usual care [various standard interventions, including behavioural strategies (average five) delivered by CAMHS team at home and in clinic]	Three 5-hour unit-based sessions, plus at least one home visit
Nansel *et al.,* 2009[166]	Research assistant (health advisor)-led family focused outpatient clinic-based education intervention. Health advisor met with parent and child at their regular clinic visit to identify and address areas of difficulty with diabetes management, set goals to improve management, facilitate family discussion and provide guidance through problem-solving process with written materials. Health advisor contacted families prior to clinic visits to remind them of the appointment	Usual care (with health advisor reminders prior to clinic visits)	Three sessions over maximum 12 months
Ng *et al.,* 2006[167]	Intensive asthma education programme: 1. an asthma nurse present during initial asthma attack 2. written information sheet with age-appropriate illustrations and cartoons, asthma diary 3. 20-minute video 4. 30-minute education and discussion session 5. asthma nurse assessed child's skills and reinforced knowledge before discharge 6. follow-up telephone call 1 week after discharge	Standard asthma education programme (1 hour in total): 1. asthma nurse acted on referral 1 or 2 days after admission 2. written information, asthma diary 3. teaching and discussion session	2 hours in total
O'Neill *et al.,* 2013;[168] and McGilloway *et al.,* 2012[169]	Community-based parent-focused group intervention (Incredible Years BASIC parenting programme). Involves discussions and role-play, videos to illustrate parenting and discipline strategies and promoting positive parenting styles	Waiting list control – care as usual	14 2-hour weekly sessions

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Otsuki *et al.*, 2009[170]	Two intervention groups: Education – home-based education with five components: 1. review prescribed asthma regimen and training in medication, spacer and peak flow technique 2. asthma action plan 3. identification of barriers to accessing health care and problem-solving to reduce barriers 4. discussion of beliefs and concerns about asthma and medications 5. provision of written asthma education materials Education and feedback – as per education plus objective feedback of medication adherence, goal-setting, reinforcement for attaining adherence goals and strategies for self-monitoring medication use	Usual care (plus asthma education booklet)	Five 30- to 45-minute sessions at 1, 2, 3, 4 and 8 weeks
Quint and Teach 2009;[171] and Teach *et al.*, 2006[172]	Outpatient clinic-based intervention. Each family met with an asthma educator and a physician. Education delivered on physiology, self-monitoring and management, and environmental triggers along with provision of hypoallergenic bed encasings. The physician completed an individual medical action plan, prescribed medication and provided device teaching. A report was sent to the child's PCP and follow-up appointment scheduled	Usual care (plus asthma education booklet)	One 60- to 90-minute appointment, within 2–15 days of ED discharge
Richardson *et al.*, 2014[173]	Outpatient clinic-based, individual intervention. Initial education and engagement session with DCM during which patients had a choice of CBT with the DCM, antidepressant medication or both. DCMs followed up every 1–2 weeks (telephone or in person) to assess treatment progress. Lack of improvement led to stepped-care process	Enhanced usual care (treatment recommendation and access to mental health care)	DCM contact every 1–2 weeks (plus optional CBT, two four-session modules)

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Rikkers-Mutsaerts *et al.,* 2012[174]	Internet-based self-management comprising four components: 1. Education – web-based and face-to-face group-based self-management education sessions 2. Self-Monitoring – asthma control measures reported via website and received instant feedback on medication if required (text message reminder sent if weekly data not reported) 3. Electronic action plan and access to asthma nurse online or by telephone 4. Regular medical review – as per usual care	Usual care	Two education sessions, weekly self-monitoring for a year
Ronchetti *et al.,* 1997[175]	Two intervention groups as clinics were randomised to deliver one of two different asthma management educational programmes for groups of CYP and parents: 1. Living with Asthma, use of written diaries for responding to problems and to develop asthma management skills 2. Open Airways encourages group members to share their problems and develop solutions together. It aims to ensure that barriers to management are identified, that solutions are practical and that both parent and child feel capable of carrying them out	Usual care	Weekly 1-hour sessions. Phase 1 eight sessions; and phase 2 four sessions
Rund *et al.,* 1994[176]	Inpatient and outpatient family-focused intervention. Three phases of psychoeducational approach: 1. Hospitalisation – optimal medication, family treatment every 2 weeks, parent seminar, start of problem-solving sessions if appropriate 2. Rehabilitation – one or more schizophrenia education seminars for parents, weekly problem-solving family sessions at home 3. Follow-up – more family sessions but less frequently, regular telephone contact	Usual care at earlier time – historical case controls	Hospitalisation: family treatment every 2 weeks, duration several months to 1 year +. Rehabilitation: monthly sessions. Follow-up sessions every 2 months

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Runge *et al.*, 2006[177]	Two intervention groups 1. Standardised patient management programme – five 2-hour CYP group education sessions, including role-playing and problem-solving exercises 2. Standardised patient management programme plus internet-based education program (education sessions plus self-selected additional internet-based asthma educational module with a quiz, an interactive adventure game, a repetition section displaying education material discussed in sessions and medical module with individual medication plans, scheduled chats with asthma experts and online peak flow protocol). Communication is between registered users	Waiting list for education programme	Five 2-hour sessions plus computer access for internet-based education program
Schmidt *et al.*, 2007[178]	Outpatient clinic-based therapist-led intervention. Guided self-care: manual-led CBT with homework. Problem focused with self-monitoring of thoughts, feelings and behaviours. Goal-setting. Therapist guides and motivates patient through manual	Family therapy: up to 13 sessions with close others and two individual sessions over 6 months	Guided self-care: 10-weekly sessions, 3-monthly follow-up sessions, two optional sessions with close other
Seid *et al.*, 2010[179]	Two groups: 1. CC – home visitors conducting asthma education based on written materials and assisting with medical insurance and other issues 2. CC plus problem-solving skills training – as CC plus generic psychoeducational approach in which problems are normalised and participants are taught to approach problems proactively. Aimed at primary caregiver, but children encouraged to participate	Usual care (ongoing asthma care and waiting list for intervention after trial)	1. CC: five weekly 45–60-minute sessions 2. CC plus problem-solving skills training: as CC followed by six 45- to 60-minute weekly sessions

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Shames *et al.,* 2004[180]	Outpatient clinic-based intervention. Children/families were assigned a case manager who helped co-ordinate medical appointments, made follow-up telephone calls to evaluate progress and provide self-management counselling and delivered asthma self-management education sessions. They also received a games console and video game based on asthma self-management skills, had visits with allergist/immunologist who developed asthma action plan and had access to free telephone helpline staffed by paediatric nurses with access to individual treatment plans	Usual care plus games console and non-asthma-related video game	Three education sessions, two allergist visits (weeks 2 and 4) and calls from case manager (to week 32)
Sockrider *et al.,* 2006[181]	Asthma educator-led intervention at ED visit. Computer-based resource with universal and tailored content that the educator navigates according to the individual child/family's needs and questions. Written asthma plan developed and report sent to PCP. Follow-up telephone call 1–2 weeks later to reinforce the action plan, address concerns and make referrals if necessary. A free 24-hour telephone service was also available for general asthma questions, answered by project physician	Usual care	Session at recruitment, then follow-up telephone call 1–2 weeks later
Southam-Gerow *et al.,* 2010[182]	Outpatient clinic-based therapist-led intervention, the Coping Cat CBT programme for childhood anxiety disorders which emphasises anxiety management skills training	Usual care (randomly assigned therapists used their usual treatment procedures)	Coping Cat is a 16- to 20-session programme
Staab *et al.,* 2002[183]	Multidisciplinary team at an outpatient clinic led a parent group training intervention. Medical, psychological and nutritional topics were presented and the group was encouraged to share personal experience and to exercise newly learned skills	Waiting list control	Six 2-hour sessions over 6 weeks
Stevens *et al.,* 2002[21]	Children and parents received an educational booklet, a written self-management plan and one-to-one structured educational sessions on asthma and self-management with a nurse	Usual care	Two 20-minute sessions: the first within 2 weeks of recruitment and the second 1 month later

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Sullivan *et al.,* 2002;[184] and Evans *et al.,* 1999[185]	Asthma counsellors met with children's care providers to improve contact with the primary care physician, ensured a care plan was obtained from or constructed with the PCP and understood by care providers, delivered group asthma education sessions to adults and children separately and referred care providers to other community resources where appropriate. Environmental intervention (advice and equipment to reduce asthma symptom triggers)	Usual care	One individual meeting plus two adult education sessions in first 2 months, then two child education sessions in next 2 months and at minimum contact every month (individual meetings/telephone calls alternating)
Svoren *et al.,* 2003[186]	Two intervention groups: 1. Outpatient clinic-based intervention focused on family led by a 'care ambassador'. A care ambassador assisted families with appointment scheduling, billing or insurance issues by directing them to appropriate personnel, monitored clinic attendance and provided telephone or written outreach to families after missed or cancelled appointments 2. Care ambassador + – as per care ambassador group plus psychoeducational modules (material on diabetes care issues created by the researchers) at each visit – written materials were provided and discussion encouraged	Usual care	Eight clinic visits over 24 months (care ambassador 5–10 minutes per visit; care ambassador + 20–40 minutes per visit), plus between-clinic contact via telephone/mail if necessary
Szczepanski *et al.,* 1996[187]	Two intervention groups: 1. Inpatient behavioural therapy family training intervention 'Osnabruck/Berlin' training course with intensive aftercare 2. The training intervention without intensive aftercare	Usual care at asthma clinic	1. 1-week (5 days) training course, then 6 months intensive aftercare (appointment every 4 weeks, two outpatient, two paediatrician clinic and two home) 2. 1-week (5 days) training course
Toelle *et al.,* 1993[188]	School-based education sessions for children and parents covering asthma basics with focus on self-management of asthma. Management plans were produced and shared with the child's doctor. Doctors, pharmacists, community nurses and teachers in the intervention area also received education sessions. All those who did not attend education sessions were sent education materials by mail	Usual care	Two 2-hour sessions over 2 weeks

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Valery *et al.,* 2010[189]	Initial asthma education session using paediatric asthma education resources adapted for local culture and three further sessions at 1, 3 and 6 months	Initial asthma education session only	Four sessions: baseline, and at 1, 3 and 6 months
Van de Wiel *et al.,* 2003[190]	School-based intervention, adapted from the preventative Coping Power Programme for parents and children. Parents attended sessions in groups of 4–8, involving teaching and advice on behaviour and stress management and family problem-solving. Children attended sessions on communication, handling emotions and social problem-solving and these were also used to inform the parent sessions	Usual outpatient clinic care (e.g. family therapy, psychoanalytic psychotherapy, play therapy)	Parents: 15 1.5-hour sessions; children: 23 weekly 1.15-hour sessions [mean duration of treatment 8 months (SD 1.4 months)]
Van Der Veek *et al.,* 2013[191]	Outpatient clinic-based individually tailored CBT for CYP and parents (as age appropriate). CBT protocol had one standard and three optional modules that the therapist could select according to the child's needs	Intensified usual care (consultations with paediatricians who gave education/advice/medication as appropriate, six 20- to 30-minute sessions over 6 weeks)	Six 45-minute weekly CBT sessions
Velsor-Friedrich *et al.,* 2012[192]	School-based education intervention for CYP 1. Asthma education: two asthma education group sessions, three education re-enforcement group sessions and one 6-month individual clinic visit 2. Coping skills training: five coping skills training sessions, one additional session and a booster session 2 months later	Asthma education as per intervention group (but no coping skills training)	Six 45-minute coping skills sessions over 6 weeks (in addition to education sessions received by all participants)
Walders *et al.,* 2006[193]	Outpatient clinic-based, family focused intervention. Baseline visit and run-in visit that included written treatment plan and a 1-hour education session. Psychologists identified biopsychosocial barriers to effective asthma management for each family and these were addressed with participants at a third study visit. Following this, families had access to a 24-hour nurse advice line	Usual care (including baseline visit and run-in visit with written treatment plan)	Three study visits

Study (first author and year of publication)	Content of intervention	Content of control	Intensity
Watson *et al.,* 2009[194]	Outpatient clinic-based group educational intervention aimed at the parent, child or both, as appropriate for child's age. The programme was delivered to groups of 6–8 participants by a nurse educator and respiratory therapist. Key educational messages were also posted to participants 2, 4, 6 and 12 months after enrolment	Usual care (via primary care physician) plus basic information booklet	Weekly 1.5-hour sessions over 4 weeks
Weisz *et al.,* 2009[195]	Outpatient clinic-based therapist-led CBT intervention. CBT for youth depression using the PASCET programme (detailed plans for 10 sessions, outlines for five more, but treatment can extend to > 15 sessions if necessary)	Usual care (outpatient therapy)	Number of therapy sessions and duration of treatment as required [mean 16.45 sessions (SD 6.07 sessions); mean duration 25.20 weeks (SD 15.40 weeks)]
Willems *et al.,* 2007[196,197] and 2008[198]	Nurse-led telemonitoring programme: participants received an asthma monitor to use at home, with which to perform daily lung function tests and pass on data to a hospital-based nurse practitioner for monitoring and treatment adjustment if required	Usual care (outpatient)	Not reported
Xu *et al.,* 2010[199]	Two groups: 1. IVR group – initial education with specialist nurse, then twice weekly automated telephone call to child/parent via IVR system to gather data (report relayed to primary physician) and provide educational messages, information and medication reminders 2. Nurse support group – initial education with specialist nurse, then regular follow-up calls (or e-mail if preferred) from specialist nurse every 2 weeks to collect data and offer education/advice	Usual care (including initial education with specialist nurse)	1. IVR: twice a week telephone calls 2. Nurse support: once every 2 weeks
Young *et al.,* 2001[200]	Air Force asthma education programme designed to educate children and parents about asthma and its management. Evening session for children and parents: video followed by discussion with nurse facilitator (children) and presentation plus Q&A with paediatric asthma specialist (parents). Once a week for 4 weeks	Usual care (plus educational pamphlets)	Evening session once a week for 4 weeks

CAMHS, Child and Adolescent Mental Health Services; CASCADE, Child and Adolescent Structured Competencies Approach to Diabetes Education; CBT, cognitive–behavioural therapy; CC, care co-ordination; CHW, community health worker; CYP, children and young people; DBT, dialectical behaviour therapy; DCM, depression care manager; DM, disease management; FACI, Facilitated Asthma Communication Initiative; IVR, interactive voice response; PASCET, Primary and Secondary Control Enhancement Training; PCP, primary care provider; Q&A, question and answer.

Appendix 8 Details of individual studies: quality

Study (first author and year of publication)	Design	Baseline sample (*n*)	Unit of allocation	Risk of bias	
				Random allocation	Allocation concealment
Atherly *et al.*, 2009[76]	Cluster RCT	Unclear	School	Unclear	Unclear
Bartholomew *et al.*, 2000[77]	RCT	171	Individual	Unclear	Unclear
Bird *et al.*, 2012[78]	Quasi-experimental	295	N/A	High	N/A
Brazil *et al.*, 1997[79]	Quasi-experimental	50	N/A	High	N/A
Brown *et al.*, 2002[80]	RCT	101	Individual	Unclear	Unclear
Browning *et al.*, 2013[81]	nRCT	30	Individual	High	High
Bruzzese *et al.*, 2011[82]	RCT	345	Individual	Low	Low
Bryant-Stephens *et al.*, 2009[83]	RCT	264	Individual	Unclear	Unclear
Butz *et al.*, 2005;[84] and Walker *et al.*, 2008[85]	Cluster RCT	221	County	Unclear	Unclear
Butz *et al.*, 2010[86]	RCT	231	Individual	Unclear	Low
Byford *et al.*, 1999;[87] and Harrington *et al.*, 1998[88]	RCT	162	Individual	Low	Low
Byford *et al.*, 2007;[89] Goodyer *et al.*, 2007[90]	RCT	208	Individual	Low	Low
Byford *et al.*, 2007;[91] and Gowers *et al.*, 2007[92] and 2010[93]	RCT	167	Individual	Low	Low
Calvo *et al.*, 2014[94]	RCT	55	Individual	Low	Unclear
Cano-Garcinuño *et al.*, 2007[95]	RCT	245	Individual	Low	Unclear
Carswell *et al.*, 1989[96]	RCT	86	Individual	Low	Unclear
Celano *et al.*, 2012[97]	RCT	43	Individual	Unclear	Unclear
Chan *et al.*, 2003[98]	RCT	10	Individual	Low	Unclear
Chan *et al.*, 2007[99]	RCT	120	Individual	Low	Unclear
Christie *et al.*, 2014[100]	Cluster RCT	362	Clinic	Low	Low
Cicutto *et al.*, 2005[101]	Cluster RCT	256	School	Low	Low
Cicutto *et al.*, 2013[102]	Cluster RCT	1316	School	Low	Unclear
Clark *et al.*, 2005[103]	Cluster RCT	639	School	Unclear	Unclear
Cowie *et al.*, 2002[104]	RCT	93	Individual	Low	Low
Domino *et al.*, 2008[105] and 2009;[106] March *et al.*, 2006[107] and 2009;[108] and the Treatment for Adolescents with Depression Study Team, 2005[109]	RCT	327	Individual	Low	Unclear
Donaldson *et al.*, 2005[110]	RCT	39	Individual	Unclear	Unclear
Dougherty *et al.*, 1998[111] and 1999[112]	RCT	63	Individual	Unclear	Unclear
Eakin *et al.*, 2012[113]	RCT and cluster	321	Individual and sites	Low	Low
Edwards *et al.*, 2007;[114] and Hutchings *et al.*, 2007[115]	RCT	153	Individual	Low	Low
Espinoza-Palma *et al.*, 2009[116]	RCT	88	Individual	Low	Low

Study (first author and year of publication)	Design	Baseline sample (*n*)	Unit of allocation	Risk of bias	
				Random allocation	Allocation concealment
Esposito-Smythers *et al.*, 2011[117]	RCT	40	Individual	Low	Low
Farber and Oliveria, 2004[118]	RCT	56	Individual	Low	Low
Flapper 2008[119]	RCT	36	Individual	Low	Unclear
Flores 2009[120]	RCT	220	Individual	Low	Unclear
Foster *et al.*, 2007;[121] Swanson *et al.*, 2001;[122] Wells *et al.*, 2000;[123] Molina *et al.*, 2009;[124] Jensen *et al.*, 2005;[125] and the MTA Cooperative Group 1999[126]	RCT	579	Individual	Low	Low
Franklin *et al.*, 2006[127]	RCT	92	Individual	Low	Unclear
Galbreath *et al.*, 2008[128]	RCT	473	Individual	Low	Low
Garbutt *et al.*, 2010[129]	RCT	362	Individual	Low	Low
Godart *et al.*, 2012[130]	RCT	60	Individual	Low	Low
Gorelick *et al.*, 2006[131]	RCT	352	Individual	Low	Low
Grainger-Rousseau *et al.*, 1996[132]	RCT	152	Individual	Unclear	Unclear
Green *et al.*, 2011[133]	RCT	366	Individual	Low	Low
Guendelman *et al.*, 2002[20] and 2004[134]	RCT	134	Individual	Unclear	Low
Hederos *et al.*, 2009[135] and 2005[136]	RCT	60	Individual	Unclear	Unclear
Homer *et al.*, 2000[137]	RCT	137	Individual	Low	Low
Horner and Brown, 2014[138]	Cluster RCT	183	Schools	Low	High
Hughes *et al.*, 1991[139]	RCT	95	Individual	Low	Unclear
Husted *et al.*, 2014[140]	RCT	71	Individual	Low	Low
Indinnimeo *et al.*, 1997[141]	RCT	120	Individual	Unclear	Unclear
Indinnimeo *et al.*, 2009[142]	nRCT	123	Individual	High	High
Joseph *et al.*, 2007[143]	RCT	314	Individual	Low	Low
Kamps *et al.*, 2008[144]	RCT	15	Individual	Low	Unclear
Kattan *et al.*, 2005;[145] and Morgan *et al.*, 2004[146]	RCT	937	Individual	Unclear	Unclear
Katz *et al.*, 2004[147]	nRCT	62	Individual	High	High
Khan *et al.*, 2004,[148] 2003[149]	RCT	310	Individual	Low	Low
Krieger *et al.*, 2009;[150] and Sunshine *et al.*, 2011[151]	RCT	309	Individual	Low	Low
Krishna *et al.*, 2003[152] and 2006[153]	RCT	246	Individual	Unclear	Unclear
Lewis *et al.*, 1984[154]	RCT	103	Individual	Low	High
Lynch *et al.*, 2011;[155] Asarnow *et al.*, 2009;[156] and Brent *et al.*, 2008[157]	RCT	334	Individual	Low	Unclear
Madge *et al.*, 1997[158]	RCT	201	Individual	Low	High
Maslennikova *et al.*, 1998[159]	RCT	252	Individual	Unclear	Unclear
McGhan *et al.*, 2003[160]	Cluster RCT	162	Schools	Unclear	Unclear
McGhan *et al.*, 2010[161]	Cluster RCT	266	Schools	Low	Unclear
Mehlum *et al.*, 2014[162]	RCT	77	Individual	Low	Low

Study (first author and year of publication)	Design	Baseline sample (*n*)	Unit of allocation	Risk of bias	
				Random allocation	Allocation concealment
Mitchell *et al.*, 1986[163]	RCT	368	Individual	Unclear	Unclear
Muntz *et al.*, 2004;[164] and Hutchings *et al.*, 2002[165]	RCT	41	Individual	Unclear	High
Nansel *et al.*, 2009[166]	RCT	122	Individual	Unclear	Unclear
Ng *et al.*, 2006[167]	RCT	100	Individual	Low	Unclear
O'Neill *et al.*, 2013;[168] and McGilloway *et al.*, 2012[169]	RCT	149	Individual	Low	Low
Otsuki *et al.*, 2009[170]	RCT	250	Individual	Low	Low
Quint and Teach, 2009;[171] and Teach *et al.*, 2006[172]	RCT	488	Individual	Low	Low
Richardson *et al.*, 2014[173]	RCT	101	Individual	Low	Low
Rikkers-Mutsaerts *et al.*, 2012[174]	RCT	90	Individual	Low	Low
Ronchetti *et al.*, 1997[175]	RCT	312	Individual/ centres	Low	Low
Rund *et al.*, 1994[176]	Quasi-experimental	24	N/A	High	N/A
Runge *et al.*, 2006[177]	Quasi-experimental	358	N/A	High	N/A
Schmidt *et al.*, 2007[178]	RCT	85	Individual	Low	Low
Seid *et al.*, 2010[179]	RCT	252	Individual	Low	Low
Shames *et al.*, 2004[180]	RCT	119	Individual	Low	Unclear
Sockrider *et al.*, 2006[181]	RCT	464	Individual	Unclear	Unclear
Southam-Gerow *et al.*, 2010[182]	RCT	48	Individual	Low	Unclear
Staab *et al.*, 2002[183]	RCT	204	Individual	Unclear	Unclear
Stevens *et al.*, 2002[21]	RCT	200	Individual	Low	Low
Sullivan *et al.*, 2002;[184] and Evans *et al.*, 1999[185]	RCT	1033	Individual	Low	Unclear
Svoren *et al.*, 2003[186]	RCT	299	Individual	Unclear	Unclear
Szczepanski *et al.*, 1996[187]	Quasi-experimental	84	N/A	High	N/A
Toelle *et al.*, 1993[188]	nRCT	132	N/A	High	High
Valery *et al.*, 2010[189]	RCT	113	Individual	Low	Unclear
Van de Wiel *et al.*, 2003[190]	RCT	77	Individual	Low	Unclear
Van Der Veek *et al.*, 2013[191]	RCT	104	Individual	Low	Low
Velsor-Friedrich *et al.*, 2012[192]	Cluster RCT	137	Schools	Unclear	Unclear
Walders *et al.*, 2006[193]	RCT	175	Individual	Low	Low
Watson *et al.*, 2009[194]	RCT	398	Individual	Low	Unclear
Weisz *et al.*, 2009[195]	RCT	57	Individual	Unclear	Unclear
Willems *et al.*, 2007[196,197] and 2008[198]	RCT	56	Individual	Low	Unclear
Xu *et al.*, 2010[199]	RCT	121	Individual	Low	Unclear
Young *et al.*, 2001[200]	nRCT	32	Schools	High	High

N/A, not applicable.

Appendix 9 Details of individual studies: economic analyses

Economic analyses: quality

Study (first author and year of publication)	Question																					
	1	2	3	4	5	6	7a	7b	8a	8b	9	10a	10b	11	12	13	14	15a	15b	16	16a	16b	16c
Atherly *et al.*, 2009[76]	✓	✓	1	5	9	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✓	✗	–	12	✓	✓	✓
Butz *et al.*, 2005;[84] and Walker *et al.*, 2008[85]	✓	✓	4	5	–	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✓	✗	–	12	✓	✓	✓
Byford *et al.*, 1999;[87] and Harrington *et al.*, 1998[88]	✓	✓	3	4	9	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✓	✗	–	12	✓	✓	✓
Byford *et al.*, 2007;[89] and Goodyer *et al.*, 2007[90]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✓	✗	–	12	✓	✓	✓
Byford *et al.*, 2007;[91] and Gowers *et al.*, 2007[92] and 2010[93]	✓	✓	4	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗	–	12	✓	✓	✓
Carswell *et al.*, 1989[96]	✓	✓	3	5	10	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗	–	12	✓	✓	✓
Christie *et al.*, 2014[100]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12	✓	✓	✓
Cicutto *et al.*, 2005[101]	✓	✓	1	5	✗	✓	✗	✓	–	✓	✓	✗	✗	✗	✗	✗	✓	✗	–	14	✓	✓	✓
Domino *et al.*, 2008[105] and 2009;[106] March *et al.*, 2006[107] and 2009;[108] and the Treatment for Adolescents with Depression Study Team, 2005[109]	✓	✓	1	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	12	✓	✓	✓
Dougherty *et al.*, 1998[111] and 1999[112]	✓	✓	1, 2	5	9	✓	✓	✓	✓	✓	✓	✗	✗	✓	✗	✗	✓	✗	–	12	✓	✓	✓
Edwards *et al.*, 2007;[114] and Hutchings *et al.*, 2007[115]	✓	✓	1	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	–	14	✓	✓	✓
Flores *et al.*, 2009[120]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✓	✗	–	14	✓	✓	✓
Foster *et al.*, 2007;[121] Swanson *et al.*, 2001;[122] Wells *et al.*, 2000;[123] Molina *et al.*, 2009;[124] Jensen *et al.*, 2005;[125] and the MTA Cooperative Group, 1999[126]	✓	✓	3, 1	8	9	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✓	✗	–	12	✓	✓	✓
Galbreath *et al.*, 2008[128]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✓	✓	12	✓	✓	✓
Green *et al.*, 2011[133]	✓	✓	4	5	9	✓	✓	✓	✓	✓	✓	✓	–	✗	✓	✗	✓	✗	–	12	✓	✓	✓
Hederos *et al.*, 2009[135] and 2005[136]	✓	✓	1	5	9	✓	✗	✓	✗	✓	✓	✗	✗	✗	✗	✗	✓	✗	–	–	✓	✓	✓
Joseph *et al.*, 2007[143]	✓	✓	3	5	–	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✓	✗	–	12	✓	✓	✓

Study (first author and year of publication)	Question																						
	1	2	3	4	5	6	7a	7b	8a	8b	9	10a	10b	11	12	13	14	15a	15b	16	16a	16b	16c
Kattan *et al.*, 2005;[145] and Morgan *et al.*, 2004[146]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✓	✗	–	12	✓	✓	✓
Lewis *et al.*, 1984[154]	✓	✗	4	5	9	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	–	✗	–	12	✓	✗	✓
Lynch *et al.*, 2011;[155] Asarnow *et al.*, 2009;[156] and Brent *et al.*, 2008[157]	✓	✓	1	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗	–	14	✓	✓	✓
Muntz *et al.*, 2004;[164] and Hutchings *et al.*, 2002[165]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓	✗	–	12	✓	✓	✓
Ng *et al.*, 2006[167]	✓	✓	4	5	9	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	–	✗	–	14	✓	✓	✓
O'Neill *et al.*, 2013;[168] and McGilloway *et al.*, 2012[169]	✓	✓	4	5	9	✓	✓	✓	✓	✓	✓	✗	✗	✗	✓	✓	✓	✗	–	14	✓	✓	✓
Rund *et al.*, 1994[176]	✓	✓	1	5	9	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	–	12	✓	✓	✓
Runge *et al.*, 2006[177]	✓	✓	2, 1	6	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✗	–	14	✓	✓	✓
Schmidt *et al.*, 2007[178]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	✓	✗	–	12	✓	✓	✓
Southam Gerow *et al.*, 2010[182]	✓	✓	4	5	10	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✓	✗	–	12	✓	✓	✓
Staab *et al.*, 2002[183]	✓	✓	4	5	10	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	–	✗	–	12	✓	✓	✓
Stevens *et al.*, 2002[21]	✓	✓	4	5	10	✓	✓	✓	✗	✓	✓	✓	✓	✗	✗	✗	✓	✗	–	12	✓	✓	✓
Sullivan *et al.*, 2002;[184] and Evans *et al.*, 1999[185]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	–	14	✓	✓	✓
Svoren *et al.*, 2003[186]	✓	✓	3	5	10	✓	✓	✓	✓	✓	✓	✗	✗	✗	✗	✗	–	✗	–	12	✓	✓	✓
Van de Wiel *et al.*, 2003[190]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✗	✓	✗	–	12	✓	✓	✓
Weisz *et al.*, 2009[195]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✗	–	12	✓	✓	✓
Willems *et al.*, 2007[196,197] and 2008[198]	✓	✓	1, 3	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	–	14	✓	✓	✓
Xu *et al.*, 2010[199]	✓	✓	3	5	9	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✓	✗	–	12	✓	✓	✓

✗, no; –, not applicable; ✓, yes.

Note

The numbers in the table cells refer to answers coded by economic checklist requirements (see *Appendix 2*).

Economic analyses: summary overview

Study (first author and year of publication)	Population setting	Intervention and comparison	Perspective and time horizon	Outcomes and costs	Outcomes reported (including ICERs and uncertainty)	Author conclusion/ additional comments
Atherly *et al.,* 2009[76]	USA Adolescents in grades 6–12	Implementation of asthma programme vs. control group	Societal 3 months follow-up	Change in symptom-free days for treated and non-treated and cost of intervention	Cost of the intervention is US$3.90 per symptom-free day (0.34 days per participant per 2 weeks) gained	The intervention is cost-effective only for adolescents who have symptoms of asthma at baseline
Butz *et al.,* 2005;[84] and Walker *et al.,* 2008[85]	USA Children aged 6–12 years with asthma	Educational asthma intervention vs. control	N/A	Parent/child asthma knowledge, self-efficacy and QoL. Costs of the intervention (nurse time, colouring books, peak flow meters, food and travel expenses)	Means and QoL	Knowledge and self-efficacy significantly higher for intervention group at follow-up. QoL parents 6.49 intervention vs. 6.38 control; QoL children 5.50 intervention vs. 4.81 for control
Byford *et al.,* 1999;[87] and Harrington *et al.,* 1998[88]	UK Children aged ≤ 16 years who have self-poisoned	Routine care plus social work intervention vs. routine care only	CEA	Suicidal Ideation Questionnaire and Hopelessness Scale. Costs: hospital services, GP, social worker and nurse. Costs per assessment session	Means	Cost intervention group is £1455 vs. cost control group £1751
Byford *et al.,* 2007;[89] and Goodyer *et al.,* 2007[90]	UK 11- to 17-year-old adolescents with major depression	Combination therapy (SSRIs and CBT) vs. therapies alone	CEA	QALYs using EQ-5D, ICER and acceptability curves	26% probability that combination therapy is more cost-effective than single therapy. Increase in QALY of 4%	The combination therapy is not cost-effective compared with single therapies
Byford *et al.,* 2007;[91] and Gowers *et al.,* 2007[92] and 2010[93]	UK Adolescents aged 12–18 years with anorexia nervosa	Inpatient psychiatric treatment, specialist outpatient treatment and general outpatient treatment	Broad service-providing perspective (includes both health and social costs)	Morgan–Russell Average Outcome Scale. Costs: health, social services, education, and voluntary and private sectors	ICER and CEACs	Specialist outpatient group is more cost-effective (£26,738) than the inpatient (£34,531) and general outpatient treatment (£40,794), but results are not statistically significant

Study (first author and year of publication)	Population setting	Intervention and comparison	Perspective and time horizon	Outcomes and costs	Outcomes reported (including ICERs and uncertainty)	Author conclusion/ additional comments
Carswell *et al.*, 1989[96]	UK Families with asthmatic children aged 5–15 years	Asthma nurse visiting homes vs. no asthma nurse	N/A	Peak expiratory flow rate, asthma knowledge, parents' time off work, child's school absence and nurses	Cost of the asthma nurse £15 patient/ 6 months	Health authority nurses sent into homes with children with asthma can improve child's physical asthma disability
Christie *et al.*, 2014[100]	UK Children aged 8–16 years with type 1 diabetes diagnosed for > 12 months	Clinic-based structured education vs. current NHS practice	Health care	Long-term glycaemic control, QoL and psychosocial functioning. Cost of the intervention	QALY = 14.43. Incremental cost of intervention = £422	Cost of intervention is £683 per child. Intervention did not improve glycaemic control and it costs more than current NHS practice. Therefore, it is not cost-effective
Cicutto *et al.*, 2005[101]	Toronto, ON, Canada Children in grades 2–5 with asthma and their parents	Asthma education programme vs. usual care for control group	Societal	Asthma QoL, self-efficacy for managing asthma, school absenteeism, days of interrupted activity, health services use and parental loss of time for work	Means and SD	Asthma education programme was able to increase QoL, improve efficacy for the treated and fewer used urgent health care at 1 year
Domino *et al.*, 2008[105] and 2009;[106] March *et al.*, 2006[107] and 2009;[108] Treatment for Adolescents with Depression Study Team, 2005[109]	USA Outpatients aged 12–18 years with a diagnosis of major depression	Treatment of CBT, fluoxetine, CBT combined with fluoxetine on children with depressive disorder vs. placebo	Societal	QALYs, ICERs, cost-effectiveness acceptability curve and differential cost-effectiveness for subgroups. Total costs of health-care services	ICERs and CEACs. Incremental cost over placebo from US$24,000/QALY for treatment with fluoxetine to US$123,000/QALY for combination therapy treatment	Combination treatment is cost-effective

Study (first author and year of publication)	Population setting	Intervention and comparison	Perspective and time horizon	Outcomes and costs	Outcomes reported (including ICERs and uncertainty)	Author conclusion/ additional comments
Dougherty *et al.*, 1998[111] and 1999[112]	Montreal, QC, Canada Children newly diagnosed with type 1 diabetes	Home care treatment vs. inpatient hospital care	Focus mainly on societal but also presents health care	Hospital use, metabolic and psychosocial outcomes, use of hospitals, counselling and nursing hours. Hospital stay, site and timing of initial teaching, hospital costs, government costs and social costs	Parents and hospital cost data. Means and SD	Societal cost was CA$48 higher when using home care. The results are sensitive to how parental time is valued. Health-care services cost was CA$768 with home care, but it was offset by the parental cost savings of CA$720. Home care improved children's outcomes without increasing the societal cost significantly
Edwards *et al.*, 2007;[114] and Hutchings *et al.*, 2007[115]	UK Children at risk of developing conduct disorder	Training programme for parents with children with conduct disorder compared with control group	Societal	ICER cost-effectiveness acceptability curve	ICER £73 (95% CI £42 to £140)	The parenting programme improves child behaviour. The programme is cost-effective
Flores *et al.*, 2009[120]	USA Urban minority children with asthma	Parents mentor intervention vs. traditional asthma care	Health-care system	Pediatric Quality of Life Inventory and parent-reported health QoL. Costs of whole intervention	ICER and QoL	ICER for intervention, US$597.10. Average monthly cost of intervention, US$60.42 vs. net savings US$40.26. Overall cost savings
Foster *et al.*, 2007;[121] Swanson *et al.*, 2001;[122] Wells *et al.*, 2000;[123] Molina *et al.*, 2009;[124] Jensen *et al.*, 2005;[125] and the MTA Cooperative Group 1999[126]	USA Children aged 7–10 years with diagnosed ADHD	Four-treatment comparison: 1. Routine community care 2. Intensive medication management 3. Multicomponent behavioural treatment 4. Behavioural treatment and medication	Health care and societal	CIS and all costs. Composite outcome measure of treatment success based on overall parents and teachers ratings. Direct costs of each treatment	ICER and CEAC	Cost-effective treatment varies as a function of the child's comorbidity and of the policy-maker's willingness to pay. Medical management not as effective as combined treatment but it is more likely to be more cost-effective

Study (first author and year of publication)	Population setting	Intervention and comparison	Perspective and time horizon	Outcomes and costs	Outcomes reported (including ICERs and uncertainty)	Author conclusion/ additional comments
Galbreath *et al.,* 2008[128]	USA Children and adults with asthma	DM and augmented DM programmes vs. routine care	Health-care system	Asthma symptoms and QoL	QoL	No significant differences among interventions. The study is not limited to children but also includes adults
Green *et al.,* 2011[133]	UK Adolescents aged 12–17 years with past episodes of self-harm	Group therapy with routine care vs. routine care	Not clear	Frequency of episodes of self-harm, severity, mood disorder, suicidal ideation and global functioning. Costs of health, social care, education and criminal justice, and family-related costs	Incremental mean costs and effects, and odds ratio	No evidence of cost-effectiveness
Hederos *et al.,* 2009[135] and 2005[136]	Parents of preschool children recently diagnosed with asthma	Intervention though extra parental support vs. control	Societal	Adherence, children's symptoms and medication. Cost in terms of parental sick leave	Means	Programme helps to reduce the number of children with exacerbation days. The intervention would save, on average, 42.5 working days to parents. The authors conclude that intervention is not cost-effective, as they say those are few days saved
Joseph *et al.,* 2007[143]	USA Urban African-American youth aged 15–19 years	Multimedia web-based asthma management program vs. generic asthma websites	Health-care system	Number of symptoms days and QoL. Cost of program delivery	QoL, CI and cost estimates	More positive behaviours of children receiving treatment. Does not compare costs between treated and non-treated

Study (first author and year of publication)	Population setting	Intervention and comparison	Perspective and time horizon	Outcomes and costs	Outcomes reported (including ICERs and uncertainty)	Author conclusion/ additional comments
Kattan *et al.,* 2005;[145] and Morgan *et al.,* 2004[146]	USA Children aged 5–11 years with asthma	Home environmental allergen asthma intervention vs. control	Health care	Maximum number of days with symptom, levels of allergens at home and costs of intervention	ICERs and acceptability curves. Coefficients of a linear fixed-effects mixed model	The intervention is cost-effective, but likelihood that the intervention is cost-saving over the 2-year follow-up period is very small (0.5%). The intervention led to 21.3 fewer days with symptoms/year, 4.4 missed school days/year and 2.1 fewer unscheduled visits. The intervention might not be cost-effective from a health-care point of view, but it is from a societal perspective
Lewis *et al.,* 1984[154]	USA Children aged 8–12 years with severe asthma	Treatment offered in small groups vs. larger groups	N/A	Number of visits to the emergency room, hospitalisation days and cost of each experimental group	ANCOVA (covariances)	Reductions on the number of hospital visits and emergency room in the treatment group and save in costs, so the programme is cost-effective
Lynch *et al.,* 2011;[155] Asarnow *et al.,* 2009;[156] and Brent *et al.,* 2008[157]	USA Children aged 12–18 years with depression	Combined CBT plus medication vs. medication only	Societal	Depression-free days, depression-improvement days and QALYs. Cost of intervention and non-protocol services	QALYs, ICER and CEACs	ICER for depression-free days is US$188, for depression-improvement days is US$142 and for QALYs US$78,948. The CEAC suggests that there is a 61% probability of combined treatment is more cost-effective (at very high threshold of US$100,000 per QALY)

Study (first author and year of publication)	Population setting	Intervention and comparison	Perspective and time horizon	Outcomes and costs	Outcomes reported (including ICERs and uncertainty)	Author conclusion/ additional comments
Muntz *et al.,* 2004;[164] and Hutchings *et al.,* 2002[165]	UK Children aged 2–10 years with behavioural problems	Intense vs. standard practice-based treatment	Multisectoral service	Child Behaviour Checklist, ICERs and CEACs	ICERs and CEACs	The ICER is £224 and the CEAC shows that 89.6% of the cost-effectiveness is saved in the controls group, whereas 99.9% applies to intense treatment. Then, the intense treatment does not significantly differ from the standard treatment
Ng *et al.,* 2006[167]	Hong Kong Children aged 2–15 years with an acute attack of asthma	Intensive asthma education programme vs. standard asthma education programme	N/A	Number of visits to the ED and the number of hospitalisations for asthma. Cost of ward services, hospitalisation costs and nursing costs	Medians	Applying the intervention reduces the costs and brings to a net saving of HK$969
O'Neill *et al.,* 2013;[168] and McGilloway *et al.,* 2012[169]	Ireland Children aged 3–7 years with behaviour problems	Incredible Years parenting programme vs. control group	N/A	Child Behaviour Inventory, use of health, educational and social services, and cost per parent	ICERs and CEACs	ICER is €87. The probability of the programme being cost-effective would exceed 90% (at a willingness-to-pay threshold of at least €137). The authors conclude that the intervention is cost-effective
Rund *et al.,* 1994[176]	Norway Adolescents aged 12–18 years with schizophrenia	Psychoeducational programme vs. standard treatment	Societal	Relapses during the 2-year programme and changes in psychosocial functioning. Costs of treatment: inpatient treatment, home visits, consultations with doctors, social welfare service costs and seminars for parents	Means and SDs	Costs are higher for the control group than for the treatment group. The intervention is successful. Only 12 patients in every group, so results cannot be generalised to the whole population

Study (first author and year of publication)	Population setting	Intervention and comparison	Perspective and time horizon	Outcomes and costs	Outcomes reported (including ICERs and uncertainty)	Author conclusion/ additional comments
Runge *et al.,* 2006[177]	Germany Children aged 8–16 years with asthma	Internet-based education programme vs. standardised programme and vs. control group	Health care and societal	Utilisation of several health care services. Direct medical and non-medical costs and indirect costs	Benefit–cost ratio and QoL	Utilisation of health-care services reduced in both intervention groups. Benefit–cost ratio improves (0.79) when adding the internet-based education program as opposed to the standardised programme (0.55). It is a non-randomised trial
Schmidt *et al.,* 2007[178]	UK Adolescents with bulimia nervosa or eating disorders	Family therapy vs. CBT	Health care	Abstinence from binge eating and vomiting. Cost of treatments	Mean cost comparisons	CBT has advantages as a family therapy as it decreases binging and it has a lower cost
Southam Gerow *et al.,* 2010[182]	USA Youth aged 8–15 years with anxiety (Caucasian, Latino, African-American)	CBT vs. usual care	N/A	Clinical outcomes and treatment durations. Cost of treatment, therapist time and medication	ANCOVA and estimated coefficients	CBT did not produce better clinical outcomes than usual care. The study was based in a small sample. There were no differences in costs between intervention and control
Staab *et al.,* 2002[183]	Germany Children aged 5 months to 12 years with atopic dermatitis	Intervention educational programme vs. control	N/A	Severity of eczema, treatment habits, treatment costs, QoL and coping strategies	Coefficients from logistic regressions	Outcomes were improved for applying intervention: less severity of eczema and a reduction of treatment costs
Stevens *et al.,* 2002[21]	UK Children aged 18 months to 5 years with asthma	Parental educational intervention and written guided self-management plan vs. usual care	N/A (possibly health care)	GP consultation rates, hospital readmissions, QoL and parent's asthma knowledge. Cost of intervention	*t*-test	No differences between groups

Study (first author and year of publication)	Population setting	Intervention and comparison	Perspective and time horizon	Outcomes and costs	Outcomes reported (including ICERs and uncertainty)	Author conclusion/ additional comments
Sullivan *et al.*, 2002;[184] and Evans *et al.*, 1999[185]	USA Asthmatic children living in rural areas	Social worker-based education programme and environmental control vs. standard care	Health care	Symptom-free days, cost per symptom-free day gained and annual costs of asthma morbidity	ICER	Intervention improves outcomes and has an average additional cost of US$9.20 (ICER) per symptom-free day gained. The intervention is more cost-effective in children with asthma severity
Svoren *et al.*, 2003[186]	USA Youths aged 7–16 years with type 1 diabetes	Care ambassador, care ambassador and psychoeducational modules vs. standard diabetes care	Health care	Number of medical visits, frequency of hypoglycaemic events, hospital/ED utilisation and HbA_{1c} levels	Means and SDs	Estimated annual cost savings of US$80,000–90,000 when using care ambassador plus intervention. In addition, there were reduced EDs and rates of hypoglycaemia. Therefore, non-medical case management seems to be cost-effective
Van de Wiel *et al.*, 2003[190]	Amsterdam, the Netherlands Children aged 8–13 years with disruptive behaviour disorders	Parent management and social problem-solving skills training vs. usual care	Health care	Therapist experience, and number of sessions and duration. Cost of treatment and usual care	Means and SDs	The intervention was 49% cheaper than usual care when attaining the same improvement in behaviour, so the treatment is cost-effective
Weisz *et al.*, 2009[195]	USA Youths aged 8–15 years with depression, low-income families	CBT vs. usual clinical care	Health care	Depressive symptom measures, parent-rated therapeutic alliance and additional services. Cost of treatment	Means and SDs	No differences in the number of depressive symptoms between treatment and control, but CBT was superior in parent-rated therapeutic alliance (i.e. it was less likely to require additional services and was less costly)

Study (first author and year of publication)	Population setting	Intervention and comparison	Perspective and time horizon	Outcomes and costs	Outcomes reported (including ICERs and uncertainty)	Author conclusion/ additional comments
Willems *et al.*, 2007[196,197] and 2008[198]	The Netherlands Children and adults with asthma	Nurse-led telemonitoring programme vs. usual care	Societal and health care	EQ-5D and SF-6D, health care, and patient and family costs	QALY and ICERs	There were no differences between groups regarding QALYs and the mean health-care costs per patient were higher in the intervention group. There was a limited cost-effectiveness from a health-care perspective. From a societal perspective, the probability of the programme being cost-effective is 85% (at a very high threshold of €80,000/QALY)
Xu *et al.*, 2010[199]	Australia Children aged 3–16 years with doctor-diagnosed asthma	IVR and specialist nurse vs. usual care	Health care	Health-care utilisation, use of oral steroid rescue and HRQoL	ICER: AUS$225.73 per child for nurse support and AUS$451.45 per child for IVR	Both IVR and support interventions are cost savings

ADHD, attention deficit hyperactivity disorder; ANCOVA, analysis of covariance; CBT, cognitive–behavioural therapy; CEA, cost-effectiveness analysis; CEAC, cost-effectiveness acceptability curve; CIS, Columbia Impairment Scale; DM, disease management; EQ-5D, EuroQol-5 Dimensions; GP, general practitioner; IVR, interactive voice system; N/A, not applicable; QALY, quality-adjusted life-year; SF-6D, Short Form questionnaire-6 Dimensions; SSRI, selective serotonin reuptake inhibitor.

Appendix 10 RE-AIM framework for included studies

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Atherly *et al.*, 2009[76]	Not reported	Not reported	School, 10 middle and high schools in two US sites	Not explicitly reported (programme facilitators, school nurses and teachers mentioned in costs)	Not reported	3 months post intervention
Bartholomew *et al.*, 2000[77]	0.89	Other 'chronic' disease excluded	Outpatient, four inner-city asthma clinical sites (two asthma clinics at hospitals and two community paediatric practices)	Self-guided (research assistants were available to support children if required)	Return rate to clinic was 66% (exceeding general return rate of 47%). 84% of children usually or always engaged in the game during sessions. 94% of children required some assistance from research assistant	Mean 7.9 months (SD 3.5 months, range 4–15.6 months)
Bird *et al.*, 2012[78]	Not reported	Not reported	Home (or sometimes GP surgery/outpatient if more appropriate)	Care facilitator (with professional experience in nursing and asthma education)	Not reported	Post intervention (mean 186 days, range 29–919 days)
Brazil *et al.*, 1997[79]	Not reported	Not reported	Day camp, children's rehabilitation centre	Day camp: teaching by physiotherapist, nurses and social worker	Not reported	Post intervention (participants had received intervention in previous 24 months)
Brown *et al.*, 2002[80]	0.70	Not reported	Home, recruitment from three asthma clinics and some primary care paediatricians serving low-income children in Atlanta, GA, USA	Trained registered nurses. Nurses documented the extent to which session objectives were met. Supervisory meetings and ongoing training	39/55 completed all sessions, four did not complete any	3 and 12 months
Browning *et al.*, 2013[81]	1.00	No exclusions	Outpatient, 10-bed adolescent psychiatric unit in an inner-city location	CBT delivered by unit clinical psychologist. Family intervention delivered by two co-therapists	Psychological interventions received more 'very satisfied' ratings than usual care	At discharge (median 76 days, range 8–358 days)

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Bruzzese *et al.*, 2011[82]	0.72	No difference in asthma classification, but more female (68%) enrolled students than non-enrolled (58%)	School, five high schools	Trained health educators – no further details	157/175 (90%) attended all three group workshops and 11 (6%) attended none. 137/175 (78%) met 4–6 times for individual coaching and 13 (7%) received none	6 and 12 months
Bryant-Stephens *et al.*, 2009[83]	Not reported	Not reported	Home	Trained lay health educators supervised by experienced practitioner until competent	77% of participants completed the project	6 months (with biweekly assessments)
Butz *et al.*, 2005;[84] and Walker *et al.*, 2008[85]	0.77	Comorbid pulmonary conditions excluded	School/community library, elementary schools in seven rural counties in Maryland, USA	Trained nurse/health educator	81% of parents completed evaluation forms and most reported positive evaluations	10 months
Butz *et al.*, 2010[86]	0.70	12 families who were eligible but dropped out before randomisation did not differ by sociodemographic characteristics from enrolled group	Home, recruitment from paediatric ED records and community paediatric practices in Baltimore, MA, USA	Trained nurse/health educators	Intervention caregivers received a mean 3.29 (SD 1.2) of 4 home visits. Clinician visit rates were low for the intervention group, 60% completed one clinician visit in 6 months and 27% completed two	12 months
Byford *et al.*, 1999;[87] and Harrington *et al.*, 1998[88]	0.56	Severe mental illness, current psychiatric patient or severely suicidal, significant learning disability and other self-harm behaviours excluded	Home, recruitment from child mental health team referrals in four Manchester hospitals	Two trained child psychiatric social workers, supervised by consultant child psychiatrist	22/85 (26%) missed one or more of the five intervention sessions	2 and 6 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Byford *et al.*, 2007;[89] and Goodyer *et al.*, 2007[90]	0.61	Schizophrenia, bipolar disorder, global learning disability, sensitivity/allergy to SSRI, medical contraindication, previous combined optimal treatment with a SSRI and CBT with no effect and rapidly remitting depression excluded	Outpatient, two study centres in different cities in UK	Psychiatrist or CBT therapist (pre-agreed competency reached and supervised by fully accredited CBT supervisor). Quality of CBT rated for 86% cases and found to be acceptable	Not reported	6, 12 and 28 weeks
Byford *et al.*, 2007;[91] and Gowers *et al.*, 2007[92] and 2010[93]	0.68	Severe learning difficulties, severe and chronic physical conditions affecting digestion and/or metabolism excluded	Inpatient recruitment from child or adolescent psychiatric units, outpatient recruitment from 35 community CAMHS in north-west England	Outpatient treatment delivered by trained member of eating disorder team, trained dietitian. Checks of fidelity made at weekly meetings between clinical and research teams	67% adherence to allocated treatment (49.1% to inpatient, 76.5% to outpatient and 71.1% to general CAMHS)	1, 2 and 5 years
Calvo *et al.*, 2014[94]	0.63	Neurological developmental disorder and drug abuse or dependency excluded	Outpatient, one hospital clinic, Spain	The same therapists delivered both programmes, externally supervised. Sessions were recorded for weekly review. Fidelity to treatment assessed with adherence questionnaire	Mean sessions attended by: • patients: 7.37 (SD 4.7) • parents: 8.93 (SD 4.07) 63.3% completed treatment	Within 1 month of intervention (9 months post baseline if participant discontinued treatment)
Cano-Garcinuño *et al.*, 2007[95]	0.91	Not reported	Outpatient, 13 primary health-care centres in Spain, Cuba and Uruguay	Paediatricians and paediatric nurses, experienced in paediatric asthma education. Website and discussion forum for standardisation of intervention	85.8% children attended all sessions and 80.5% caregivers attended all sessions	1 and 6 months post intervention

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Carswell *et al.*, 1989[96]	0.75	Not reported	Home, recruitment from two family group practices	District health authority nurses (full-time working community nurses) trained for 1 week in paediatric asthma management	All families reported a benefit of nurse visits	6 months (4 weeks of PEF readings – not stated when)
Celano *et al.*, 2012[97]	0.23	Non-atopic, non-psychiatric illnesses needing daily medication excluded. No differences in characteristics between participants and those who withdrew after screening ($n = 8$)	Home, recruited from an urban hospital and asthma camp	Two trained asthma counsellors (a postdoctoral fellow in psychology and a respiratory therapist). 16% sessions recorded and rated by supervisors to assess treatment fidelity. Mean 70% (range 22–100%) adherence to curriculum	All families received at least one visit, mean 4.6 (SD 1.2) and 86% received 4–6 visits	Post intervention and 6 months later
Chan *et al.*, 2003[98]	Not reported	Not reported	Home (via internet)	Case manager (pharmacist) delivered education	In the first 90 days 70.0% inhaler videos were submitted, 69.2% peak flow meter use videos were submitted and 18.7% symptom diary entries were completed. For days 90–180 these figures were 54.2%, 45.0% and 6.7%, respectively	90 and 180 days
Chan *et al.*, 2007[99]	0.95	Not reported	Home (via internet), Oahu, HI, USA	Case manager (nurse or clinical pharmacist)	Electronic submission of peak flow only 1 out of 4 of that directed by protocol and symptom diaries were completed every 2.8 days on average	6 and 12 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Christie *et al.*, 2014[100]	0.27	Comorbid chronic illness that was likely to impact on HbA_{1c} levels, ongoing psychiatric/psychological therapy or significant learning disability excluded	Outpatient, 14 paediatric diabetes services, England, UK	Paediatric diabetes specialist nurse with another team member. Training was through two 1-day workshops. Some sessions were delivered by an untrained second educator. Self-reported fidelity was 100%, observers scored it lower although still high	68% of possible groups were run. 53% of families attended at least one session	12 and 24 months
Cicutto *et al.*, 2005[101]	0.86	Second major chronic illness with a pulmonary component (e.g. cystic fibrosis) excluded	School, elementary schools (26 in total, unclear how many received intervention) in Toronto, ON, Canada	Certified asthma educators (6 months training), trained specifically in RAP with 2-day workshop	9/132 children did not receive intervention as they had other lunchtime activities	2 months (QoL), 3, 6, 9 and 12 months
Cicutto *et al.*, 2013[102]	0.53	Chronic conditions that could mimic asthma (e.g. cystic fibrosis) excluded	School, 85 elementary schools	Public health nurses (attended RAP training workshop) and a certified asthma educator	29–45% increase in the use of comprehensive school asthma plans (school personnel report)	7–9 weeks, 12 months (some data collected every 3 months)
Clark *et al.*, 2005[103]	Not reported	Not reported	School, 21 elementary schools in one industrial and one agricultural area in China	Teachers, trained in a 2-day workshop by trainer from the US programme team	Not reported	12 months
Cowie *et al.*, 2002[104]	0.37	Not reported	Outpatient, single site in Calgary, AB, Canada	Asthma educators, respiratory therapists, respiratory physician or paediatrician	81% of programme attendees returned for the second visit	3 and 6 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Domino *et al.*, 2008[105] and 2009;[106] March *et al.*, 2006[107] and 2009;[108] and the Treatment for Adolescents with Depression Study Team, 2005[109]	Unclear	Bipolar disorder, conduct disorder, thought disorder, developmental disorder, substance abuse or dependency, treatment with psychotropic medication and confounding medical conditions excluded Comparison with national survey data shows study sample is similar to adolescent population treated for depression in male-to-female ratio, but higher percentage of African-American and Hispanic adolescents in study sample	Outpatient, 13 academic and community clinics in the USA	Pharmacotherapist and CBT therapist	87/111 CBT alone group and 92/107 CBT + fluoxetine group completed 12 weeks. Mean 11/15 (median 12/15) CBT sessions attended for both CBT alone and with fluoxetine groups	12 and 36 weeks
Donaldson *et al.*, 2005[110]	0.89	Psychosis or intellectual functioning judged by a clinician to preclude engagement in psychotherapy excluded	Outpatient	Therapists (with doctorate in clinical psychology, or masters degree in psychology or social work) trained in both interventions. All sessions audio-taped and performance reviewed during weekly supervision meetings, with a random 44% rated for session adherence and therapist competence	6/21 dropped out of SBT treatment and 2/18 dropped out of SRT. 77% of participants attended six or more sessions	3 and 6 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Dougherty *et al.*, 1998[111] and 1999[112]	1.00	Not reported	Home-based, recruitment from children's hospital in Montreal, QC, Canada	Diabetes treatment nurse conducted home visits. Usual outpatient care provided by diabetologists, psychologist and social worker. Telephone line manned by nurse or physician	Mean 20.0 hours home visits and telephone consultations in month 1, 31.0 hours in months 2–20	24 months
Eakin *et al.*, 2012[113]	0.75	Not reported	Community (Breathmobile) and home (FACI) in Baltimore, MD, USA	Breathmobile: specially trained nurse practitioner, allergist, nurse and assistant FACI: asthma educator	19% of Breathmobile-only participants completed a Breathmobile visit, 64% of FACI-only patients completed both FACI visits, 65% of combined Breathmobile and FACI patients completed both FACI visits and 22% completed a Breathmobile visit	6 and 12 months
Edwards *et al.*, 2007;[114] and Hutchings *et al.*, 2007[115]	0.93	Not reported	Community, 11 Sure Start areas in Wales, UK	Two trained leaders (social workers, Barnardo's project workers, health visitors, psychologists). Random videotapes were evaluated by an independent programme trainer to assess treatment fidelity	71% attended seven or more sessions, mean attendance: 9.2 (SD 3.2) sessions	6 months
Espinoza-Palma *et al.*, 2009[116]	1.00	Other lung diseases (e.g. cystic fibrosis, ciliary dyskinesia, chronic lung injury secondary to aspiration, bronchopulmonary dysplasia, foreign body, bronchiolitis obliterans, cardiopulmonary malformation or neurological alterations) excluded	Inpatient, inner-city children's hospital in Chile	Research nurse	Not reported	3, 6, 9 and 12 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Esposito-Smythers *et al.,* 2011[117]	0.75	Actively psychotic, bipolar disorder excluded	Outpatient	Therapists (clinical psychologists, clinical psychology postdoctoral trainees, masters level clinician) trained and experienced in CBT. The first two sessions and random session audiotapes were rated for fidelity	74% of adolescents, 90% of parents and 74% of families completed an acute dose of treatment (24 sessions for adolescents and 12 for parents)	18 months
Farber and Oliveria 2004[118]	Not reported	Other clinically significant (i.e. moderate to severe chronic illness) conditions excluded	Inpatient, inner-city paediatric ED in New Orleans, LA, USA	Research staff (a paediatric pulmonary fellow and a research nurse)	27/28 received the education intervention, 8/28 completed all three follow-up calls and 23/28 completed at least one call	1 and 6 months
Flapper *et al.,* 2008[119]	0.73	Other causes of low HRQoL or cognitive level of < 7 years excluded	Outpatient	Paediatric nurse and child physiotherapist, trained in the programme	Attendance was 84.5% for children and 79.4% for parents	3, 6 and 9 months
Flores *et al.,* 2009[120]	0.65	Significant comorbidities (including other pulmonary conditions, cardio-pathologies, renal abnormalities, diabetes or epilepsy) were excluded	Community centres and homes based in Milwaukee, WI, USA	Parent mentors, experienced African-American or Latino parents of children with asthma, living in the same community as participants, received a 2.5-day training session with a nurse specialist and programme co-ordinator	60% participants remained in study for 12 months and 24% of these had high participation (attended > 25% meetings, completed > 50% telephone calls)	Monthly for 12 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Foster *et al.*, 2007;[121] Swanson *et al.*, 2001;[122] Wells *et al.*, 2000;[123] Molina *et al.*, 2009;[124] Jensen *et al.*, 2005;[125] and the MTA Cooperative Group, 1999[126]	Unclear	Bipolar disorder, psychosis or personality disorder; chronic serious tics/ Tourette syndrome; OCD requiring separate treatment; major neurological or medical illness; suicidal/homicidal; score of < 80 on Wechsler Intelligence Scale for children – third edition excluded	Outpatient clinic, recreational settings and school, six sites	A therapist consultant delivered parent training. The summer treatment programme and school-based treatment was delivered by counsellors/ aides (behaviourally trained paraprofessionals) supervised by the therapist consultant. Medication management visits with pharmacotherapist. All sessions were audio-taped and there was regular supervision and meetings of pharmacotherapists and psychotherapists	Families attended mean 77.8% parent training sessions and 36.2/40 summer treatment programme days. At school the mean was 47.6/60 days work with classroom aides	14 months, 6 and 8 years
Franklin *et al.*, 2006[127]	0.73	Serious social problems, severe learning difficulties, needle phobia excluded	Home, Tayside, Scotland, UK	Not applicable	At the end of the study 90% wanted to continue receiving messages	12 months
Galbreath *et al.*, 2008[128]	0.67	Not reported	Home, TX, USA	DM delivered by registered nurses trained in respiratory care., Augmented DM home visits by respiratory therapists	Not reported	6 and 12 months
Garbutt *et al.*, 2010[129]	0.75	Not reported	Home	Coaches were call centre nurses with ≤ 2 years paediatric nursing experience, trained over ≤ 2 weeks. Group meetings every 6 weeks	92% participants had at least one call with coach, 15% had nine or more calls	12 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Godart *et al.*, 2012[130]	0.79	Metabolic pathology interfering with eating or digestion (e.g. diabetes, psychotic disorder) excluded Patients and parents who refused to participate did not differ from those included in sociodemographic variables or clinical status on entry and at discharge	Outpatient	Two experienced co-therapists delivered FT. Weekly meetings with other practitioners, meetings with research team every 2–3 months to ensure consistency	29/30 received intervention, attending an average of 11.8 (SD 5.7) FT sessions	18 months
Gorelick *et al.*, 2006[131]	0.26	Other chronic pulmonary disease, presence of a tracheostomy excluded Those who were eligible but did not take part were similar to those who participated in age, ED visits and percentage with persistent asthma	1. Home (via telephone) 2. Home (visits and telephone) Recruitment from children's hospital ED in Wisconsin, USA	Study co-ordinator liaised between participants and primary care provider. Case management intervention delivered by nurse or social worker case manager	In case manager intervention, 72% participants had at least one home care visit	1, 3 and 6 months
Grainger-Rousseau *et al.*, 1996[132]	Not reported	Significant pulmonary disease, pathology that would hinder pulmonary function tests or completion of the assessment questionnaires excluded	Pharmacy, health centre community pharmacy in Northern Ireland	Pharmacist	GP acceptance of pharmacist recommendations was 87%, 95% participants found the service convenient to attend	6 months
Green *et al.*, 2011[133]	0.93	Low-weight anorexia, current psychosis, attendance at a special learning disability school excluded	Outpatient, eight CAMHS centres in north-west England, UK	Experienced therapists, trained by programme developers and the researchers. Protocol adherence measured from video-taped sessions (four per site per year) by independent experts	144/183 attended four or more sessions, mean attended was 10.2 (SD 10.1) sessions	6 and 12 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Guendelman *et al.*, 2002[20] and 2004[134]	0.99	Mental or physical challenges that could make it difficult to use Health Buddy. Comorbid conditions that could affect QoL excluded	Home	Nurse co-ordinator	89% used Health Buddy ≥ 3 days a week on average, use decreased over time	12 weeks
Hederos *et al.*, 2009[135] and 2005[136]	0.91	Primary ciliary dysfunction, autism (excluded post recruitment) excluded	Outpatient	Nurses, psychologists and paediatricians	70% participation in initial three sessions and 40% participation in session 4	18 months, 6 years
Homer *et al.*, 2000[137]	0.29	Major chronic illness with a pulmonary component (e.g. cystic fibrosis) excluded No difference in age or proportion covered by private insurance between those who enrolled and those who did not	Outpatient	Not applicable (guidance by research assistant if necessary)	63% of participants returned for more than one visit. All children reported enjoying using the game, parents enjoyed educational videos but not playing the game	12 months
Horner *et al.*, 2014[138]	0.76	Significant comorbidity that would preclude participation in classes excluded No differences between study participants and non-participants from original sample in gender, grade level or ethnicity	School and home in rural Texas, USA	School nurses, assisted by health aides or licensed vocational nurse	96/101 received intervention	1, 4 and 7 months post intervention (whole data collection period including intervention = 12 months)
Hughes *et al.*, 1991[139]	0.42	Other major medical problems excluded	Outpatient (one children's hospital) and home	Paediatric respirologist and nurse in clinic, home visits by nurse	100% satisfied with medical care (84% of control) and 91% found home visits beneficial	6 and 12 months, and 2 years

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Husted *et al.*, 2014[140]	0.52	Mental health problem/ undergoing psychiatric or psychological treatment excluded	Outpatient, two hospital paediatric clinics in Denmark	Paediatric physicians, diabetes nurses and dieticians with at least 1 year's experience in diabetes paediatric outpatient clinic, GSD-Y trained. Fidelity of treatment assessed	26/37 completed eight sessions	6 months post treatment [treatment duration mean 608 (SD 125) days]
Indinnimeo *et al.*, 1997[141]	Not reported	Not reported	Outpatients in Italy	Trained doctor	Not reported	12 months
Indinnimeo *et al.*, 2009[142]	Not reported	Not reported	Outpatient, six specialist paediatric asthma clinics in Italy	Resident physicians and trained nurses	Not reported	2, 4 and 12 months
Joseph *et al.*, 2007[143]	0.26	Participants were more likely than non-participants to be female, have a physician diagnosis of asthma, have missed school in previous 30 days and be classified as having mild, persistent asthma	School, six high schools in Detroit, MI, USA	Not applicable	8% did not complete any sessions and 74.1% completed all four sessions	12 months
Kamps *et al.*, 2008[144]	0.44	Not reported	Home, recruitment from two asthma clinics	Two psychologists and two masters-level graduate students in psychology. Fidelity ensured by use of checklist of tasks and regular meetings	All participants completed intervention	12 months
Kattan *et al.*, 2005;[145] and Morgan *et al.*, 2004[146]	0.94	Other serious chronic illnesses excluded	Home, seven low-income urban areas in the USA	Two environmental counsellors per visit (high-school graduates from the community, trained using centralised training sessions)	Not reported	1 and 2 years

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Katz *et al.,* 2004[147]	Not reported	Mental retardation, psychosis, bipolar affective disorder and severe learning difficulties excluded	Inpatient, two psychiatric inpatient units	Psychiatrist with 2 years adolescent DBT training, supervised by intensively trained DBT therapist. Regular consultation meetings to increase adherence to treatment	All DBT participants completed treatment	12 months
Khan *et al.,* 2004;[148] and Khan 2003[149]	0.66	Children with bronchitis where it was unclear whether or not the main diagnosis was asthma were excluded	Home, participants recruited from ED of Sydney Children's Hospital, Sydney, NSW, Australia	Trained asthma educators, registered nurses who had attended an Asthma Educators Association course	Not reported	6 months
Krieger *et al.,* 2009;[150] and Sunshine *et al.,* 2011[151]	0.45	Not reported	At home in Washington, DC, USA	Community health workers who had personal/family experience of asthma and shared ethnic background with participant	133/156 received the full intervention (all received first CHW visit and 153 had at least one follow-up visit)	12 months
Krishna *et al.,* 2003[152] and 2006[153]	0.99	Cystic fibrosis, bronchopulmonary dysplasia or other chronic lung disease excluded	Outpatient, paediatric pulmonary clinic, in the USA	Not applicable (self-guided)	Children rated computers as their preferred method of receiving information	3 and 12 months
Lewis *et al.,* 1984[154]	0.77	Not reported	Outpatient, two allergy clinics in Los Angeles, CA, USA	Physician and other educators (programme designed to be delivered by teachers, health educators or nurses)	48/62 intervention group attended three or more sessions	3, 6 and 12 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Lynch *et al.*, 2011;[155] Asarnow *et al.*, 2009;[156] and Brent *et al.*, 2008[157]	0.85	Bipolar spectrum disorders, psychosis, pervasive developmental disorder, autism, eating disorders, substance abuse or dependence and hypertension were excluded	Outpatient, six academic and community clinics in the USA	CBT delivered by experienced therapists with at least a masters degree in a mental health field, 2-day training at the beginning and mid-point of the study. Sessions were taped and 92.8% pharmacotherapy sessions rated as acceptable quality. Between 93.9% and 94.9% CBT sessions were rated acceptable	110/166 completed the treatment protocol. 7/166 completed two or more CBT sessions	6, 12 and 24 weeks
Madge *et al.*, 1997[158]	0.71	Demographic and clinical data show the children who did not take part were very similar to those who did	Outpatient, large children's hospital in Glasgow, UK	A trained specialist asthma nurse	Not reported	2–14 months
Maslennikova *et al.*, 1998[159]	0.68	Not reported	Outpatient, research centre for preventative medicine in Moscow, Russia	The investigators and paediatricians from the research centre delivered education sessions	Not reported	10–12 months
McGhan *et al.*, 2003[160]	0.25	Not reported	School, 18 elementary schools in total (unclear how many received the intervention) in Edmonton, AB, Canada	Nursing and pharmacy students trained in a 2-day workshop, under guidance of supervisor	85–100% attendance rate for the child sessions. Parent and teacher attendance was 10–80%	9 months
McGhan *et al.*, 2010[161]	0.93	Not reported	School, 34 schools in total (unclear how many received the intervention) in three health regions of Alberta, Canada	Instructors (four respiratory therapists, one community health nurse) trained in a 2-day workshop	None of the children dropped out of the intervention once it commenced	6 and 12 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Mehlum *et al.*, 2014[162]	0.41	Bipolar disorder, schizophrenia, schizoaffective disorder, psychotic disorder not otherwise specified, intellectual disability and Asperger syndrome were excluded	Outpatient, 10 child and adolescent psychiatric clinics	Eight therapists (psychiatrists, clinical psychologists and an educational psychologist) recruited and trained for the trial with a 80-hour seminar and 12 months supervised practice. Only therapists with consistent adherence to treatment during training took part. Sessions were independently rated	Participants attended mean 13.8 (SD 6.9) individual sessions and 11.2 (SD 5.9) family sessions	9, 15 and 19 weeks
Mitchell *et al.*, 1986[163]	Not reported	Not reported	Home, living in Auckland, New Zealand	Community child health nurses	68% had all six visits and 26% had 1–5 visits	6 and 18 months
Muntz *et al.*, 2004;[164] and Hutchings *et al.*, 2002[165]	0.87	Significant intellectual or physical deficit excluded	Home and outpatient, specialist unit	Two consultant clinical psychologists	Not reported	6 months, 4 years
Nansel *et al.*, 2009[166]	0.73	Major chronic disease or psychological problems, substance abuse excluded	Outpatient, four major medical centres	College-educated research assistants were specially trained as health advisors. Study investigators supervised and checked fidelity of intervention delivery. All sessions were fully or partially completed in each compulsory domain	Average of 2.85 clinic visits. Participating caregivers rated as 'completely' or 'somewhat' involved except one caregiver at one session. In total, > 91% youth and 97.7% parents agreed or strongly agreed that health advisors 'helped us learn new ways to solve problems'	Mid-point and post intervention
Ng *et al.*, 2006[167]	Not reported	Not reported	Inpatient, paediatric ward in a general hospital in Hong Kong	Asthma nurse	Significantly more parents satisfied with intervention (52/55) than control (36/45)	3 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
O'Neill *et al.*, 2013;[168] and McGilloway *et al.*, 2012[169]	Not reported	Not reported	Community, various community centres in four disadvantaged urban areas	11 trained group facilitators (various backgrounds, including psychology, counselling, education) and two per group. Facilitators received weekly supervision from an independent programme trainer. Video-taped sessions were randomly reviewed by the trainer	60% completed seven or more sessions	6 months
Otsuki *et al.*, 2009[170]	0.55	Not reported	Home, recruited from paediatric ED in Baltimore City, MD, USA	Trained asthma educators	71% of education group completed all five visits [mean 4.0 (SD 1.7) visits]. 63% of education and feedback group completed all five visits [mean 3.8 (SD 1.8) visits]	6, 12 and 18 months
Quint and Teach 2009;[171] and Teach *et al.*, 2006[172]	0.94	Significant medical comorbidities affecting the cardiorespiratory system were excluded	Outpatient, specialised asthma clinic in urban paediatric ED	Asthma educator and physician	High adherence and engagement (use of medical action plan, medication and inhalers and bed casings, etc. at follow-up)	1, 3 and 6 months
Richardson *et al.*, 2014[173]	0.96	Alcohol/drug misuse, suicidal plan or recent attempt, bipolar disorder or developmental delay were excluded	Outpatient, nine clinics in three urban areas in Washington State, DC, USA	Delivery by masters-level clinicians (depression care managers) trained by the study psychologist, with weekly clinical supervision	All had at least one in-person visit with a DCM, mean 14 (SD 8.2) in-person visits, 7 (SD 5.1) telephone sessions	6 and 12 months
Rikkers-Mutsaerts *et al.*, 2012[174]	0.13	Relevant comorbidity excluded	Home/outpatient, participants from 35 GPs and eight hospital outpatient clinics in the Netherlands	A specialist asthma nurse delivered education sessions and was available to contact	27/46 attended first and 10/46 second educational session, six were lost to follow-up and five withdrew consent before the end of the intervention at 12 months. The average number was 4.6 online contacts with an asthma nurse	3 and 12 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Ronchetti *et al.*, 1997[175]	Not reported	Not reported	Outpatient, 14 medical centres from across Italy	Physicians (and a psychologist and a social worker) were trained in a 3-day seminar	Not reported	12 months
Rund *et al.*, 1994[176]	Not reported	Not reported	Inpatient/outpatient, national child and adolescent psychiatry unit in Norway	Not explicitly reported (presumably professionals working in the unit)	All but two sets of parents reported satisfaction with the psychoeducational treatment programme	2 years
Runge *et al.*, 2006[177]	Unclear	Not reported	Outpatient and home/school (for internet intervention) and 36 study centres (GP, specialist offices, hospital asthma outpatient clinics)	Not reported	Not reported	6 months (all groups) and 12 months (intervention groups only)
Schmidt *et al.*, 2007[178]	0.61	Learning disability, severe mental illness or substance dependence excluded	Outpatient, four NHS eating disorder services in the UK	23 experienced therapists trained in FT and guided self-care, who received weekly supervision. Three experienced supervisors provided regular 'live' supervision of FT and taped sessions were checked	29/41 received four or more FT sessions and 31/44 received all self-care sessions. One switched from family to self-care therapy	6 and 12 months
Seid *et al.*, 2010[179]	0.73	Comorbid conditions that could affect care or outcomes were excluded No difference between participants and those eligible but refused on child age or gender, referral source or asthma severity	Home, San Diego, CA, USA	CC delivered by bachelor-level asthma home visitors. Problem-solving skills training delivered by masters-level health educators. All received 2 weeks of training. All sessions audio-taped and used in weekly supervision meetings, and a random 10% were rated. Treatment fidelity was 98.4% for CC and 97.5% for CC+ problem-solving skills training	91.6% sessions were delivered for CC and 71.8% for CC+ problem-solving skills training (23.8% received no problem-solving skills training, 52.4% all)	3 and 9 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Shames *et al.*, 2004[180]	Not reported	Those under the care of an allergist or pulmonologist were excluded	Outpatient, three study centres at hospitals in and around San Francisco and San Jose, CA, USA	Case manager delivered education sessions – no details on expertise or training	73% of the intervention group completed all study visits	8, 32 and 52 weeks
Sockrider *et al.*, 2006[181]	Not reported	Other chronic lung or cardiovascular disease were excluded	ED, four EDs in the greater Houston–Galveston area, TX, USA	Asthma educators (nurses, respiratory care practitioners, a physician and a layperson) were trained in intervention delivery	Five calls were made to the 24-hour telephone line	9 months
Southam-Gerow *et al.*, 2010[182]	0.37	Pervasive developmental disorder, psychotic disorder or intellectual disability were excluded	Outpatient, six public, urban, community mental health clinics	Experienced therapists who received 1 day of training in the Coping Cat programme plus weekly supervision by a psychologist with Coping Cat expertise. Therapists were randomly assigned to Coping Cat or usual care. Sample testing found 98.9% Coping Cat sessions contained expected procedures	54% Coping Cat group received 16 or more sessions	Post intervention
Staab *et al.*, 2002[183]	Not reported	Not reported	Outpatient	Different sessions were delivered by a paediatrician, psychologist, dietitian or paediatrician and psychologist together	Not reported	12 months
Stevens *et al.*, 2002[21]	Not reported	Not reported	Outpatient (or first session on the ward if recruited as an inpatient), two children's hospitals in England, UK	Specialist respiratory nurse with a diploma in asthma care	Not reported	3, 6 and 12 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Sullivan *et al.*, 2002;[184] and Evans *et al.*, 1999[185]	0.86	Eligible children who did not participate did not differ from study participants in age, sex, health-care use and symptoms, but enrolled participants used more asthma medications	Outpatient, eight sites in seven inner-city urban areas in the USA	Asthma counsellors were master's-level social workers, trained in three 2.5-day sessions and with 2 weeks' asthma clinic experience	Not reported	1 and 2 years
Svoren *et al.*, 2003[186]	Unclear	Major psychiatric problems excluded Those who declined to participate were slightly older and had slightly longer duration of diabetes than, but similar glycaemic control to, participants	Outpatient, paediatric unit of a diabetes centre in New York, NY, USA	Care ambassadors were college graduates with no formal medical education, trained by research and medical staff	Mean clinic visits was 7.3 (SD 2.06) for care ambassador and 7.5 (SD 2.02) for care ambassador+ compared with 5.4 (SD 2.62) for control. Total range was 1–14 clinic visits	24 months
Szczepanski *et al.*, 1996[187]	Not reported	Not reported	Inpatient (initial intervention) and outpatient (with two home visits during intensive aftercare), two asthma centres in Germany	Interdisciplinary – sessions conducted by professionals jointly	Not reported	6 and 12 months
Toelle *et al.*, 1993[188]	Not reported	Not reported	School, primary schools in Sydney, NSW, Australia	Not reported	54 (74%) intervention families attended the sessions. A total of 38 children suggested a change in management and 11 accepted the new 'plan'	3 and 6 months
Valery *et al.*, 2010[189]	0.97	Not reported	Home, Torres Strait region, QLD, Australia	Trained indigenous health-care workers (received specialist training in a 3-day asthma education workshop and specialist clinic experience)	Protocol was for four visits post baseline assessment, median of 2 (range 0–4) visits were actually received	12 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Van de Wiel *et al.*, 2003[190]	Not reported	Not reported	School	Clinically inexperienced therapists (with a psychology masters degree) received 6 months training prior to the study and regular supervision meetings	4/38 intervention participants and 5/39 control participants did not complete the programme	9 and 15 months
Van Der Veek *et al.*, 2013[191]	0.75	Those with evidence of an inflammatory, anatomic, metabolic, or neoplastic process cause of symptoms, or psychiatric disorder requiring treatment first were excluded	Outpatient, hospital outpatient clinic in the Netherlands	Psychology masters students or psychologists, trained and supervised by an experienced children's psychotherapist. Biweekly supervision	6/52 did not complete CBT, two of these found an alternative treatment. 4/52 did not complete intensive medical care and one of these requested CBT instead	6 and 12 months
Velsor-Friedrich *et al.*, 2012[192]	0.93	Significant chronic illnesses excluded	School, five high schools in low-income and high African-American areas of Chicago, IL, USA	Doctoral student, trained in delivering coping skills by the principal investigator. Audio-taped sessions reviewed by principal investigator to assess fidelity	Not reported	2, 6 and 12 months
Walders *et al.*, 2006[193]	0.54	Serious comorbid chronic health conditions were excluded	Outpatient, an urban academic tertiary care medical centre in the USA	A paediatric pulmonologist prepared a treatment plan. Education session delivered by nurse or asthma social worker. Psychologists identified content for session 3. Nurses provided telephone advice	6/89 families did not return for third visit. 26% of families used nurse advice telephone line	6 and 12 months

DOI: 10.3310/hsdr06030

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Watson *et al.*, 2009[194]	0.40	Other serious chronic illnesses, including respiratory illnesses, were excluded	Outpatient, a children's hospital in an urban setting in Canada	Experienced nurse educator and respiratory therapist	Not reported	12 months
Weisz *et al.*, 2009[195]	0.69	Psychotic or developmental disorders excluded	Outpatient, seven public urban community mental health clinics in a US county	Community clinic therapists, trained in PASCET by experienced clinical psychologists. 1-day training. 30 minutes weekly supervision. Sessions were video-taped and a random 50% cases were coded. Mean 98% required elements were present in the sessions	Mean cancelled sessions were 2.25 (SD 2.28) sessions and no shows were 1.66 (2.98) sessions	End of treatment (mean duration was 25.2 weeks for intervention and 39.26 weeks for control)
Willems *et al.*, 2007[196,197] and 2008[198]	Unclear	Severe comorbidity (such as cystic fibrosis or congenital lung abnormalities) excluded	Home, recruitment from single hospital outpatient department in the Netherlands	Hospital-based nurse practitioner	After baseline, 85–92% questionnaires and 81–90% diary entries were completed. The average number of PEF tests completed per day was 1.3 (protocol specified 2). Most children responded 'maybe' when asked if they wanted to continue with monitor use	4, 8 and 12 months
Xu *et al.*, 2010[199]	0.54	Not reported	Home (telephone based)	Specialist nurse or automated system	IVR: successful call rate 63%, 19/25 reported IVR system very worthwhile, 4/25 not very worthwhile. Nurse support: 56% successful calls, 53% successful e-mails, 19/25 reported support worthwhile, 1/25 not worthwhile	6 months

Study (first author and year of publication)	Participation rate[a]	Representativeness of sample[b]	Intervention		Process measures[d]	Follow-up measure timings[e]
			Setting and size	Expertise[c]		
Young *et al.*, 2001[200]	0.73	Not reported	School, two elementary schools in Toronto, ON, Canada	Nurse facilitator and paediatric asthma specialists	17/24 received the intervention. Those who attended were satisfied (33%) or very satisfied (66%)	6 weeks post intervention

CAMHS, Child and Adolescent Mental Health Services; CBT, cognitive–behavioural therapy; CC, care co-ordination; CHW, community health worker; DBT, dialectical behaviour therapy; DCM, depression care manager; DM, disease management; FACI, Facilitated Asthma Communication Initiative; FT, family therapy; GP, general practitioner; GSD-Y, Guided Self-Determination – Youth; IVR, interactive voice response; OCD, obsessive–compulsive disorder; PASCET, Primary and Secondary Control Enhancement Training; PEF, peak expiratory flow; RAP, Roaring Adventures of Puff; SBT, skill-based treatment; SRT, supportive relationship treatment; SSRI, selective serotonin reuptake inhibitor.

a Proportion of eligible population included in the study (number randomised/number eligible).

b Details of LTCs excluded, and (where reported) any comparison of the participants included in the study and those eligible but not included.

c Details of who delivered the intervention, their training and fidelity of intervention delivery.

d Levels of adherence and engagement. This includes adherence to the intervention, attendance at treatment sessions and survey/opinion/engagement measures.

e Time from baseline except where stated otherwise.

EME
HS&DR
HTA
PGfAR
PHR

Part of the NIHR Journals Library
www.journalslibrary.nihr.ac.uk

Published by the NIHR Journals Library